S. HRG. 109–827, PT. 2

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2007

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED NINTH CONGRESS

SECOND SESSION

ON

S. 2766

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2007 FOR MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL YEAR FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

PART 2
SEAPOWER

MARCH 29; APRIL 4, 6, 2006

Printed for the use of the Committee on Armed Services

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WEDNESDAY, MARCH 29, 2006

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington DC.

NAVY/MARINE CORPS FORCE STRUCTURE AND FUTURE CAPABILITIES

The subcommittee met, pursuant to notice, at 3:35 p.m. in room SR–232A, Russell Senate Office Building, Senator James M. Talent (chairman of the subcommittee) presiding.

Committee members present: Senators Talent, Kennedy, and Reed.

Majority staff members present: Ambrose R. Hock, professional staff member; Stanley R. O'Connor, Jr., professional staff member; and Sean G. Stackley, professional staff member.

Minority staff members present: Daniel J. Cox, Jr., professional staff member; and Creighton Greene, professional staff member.

Staff assistants present: Micah H. Harris and Benjamin L. Rubin.

Committee members' assistants present: Lindsey R. Neas, assistant to Senator Talent; Mieke Y. Eoyang, assistant to Senator Kennedy; and Neil Campbell, assistant to Senator Reed.

OPENING STATEMENT OF SENATOR JAMES M. TALENT, CHAIRMAN

Senator TALENT. Welcome to everybody. The subcommittee meets today to receive testimony on the Navy and Marine Corps force structure and future capabilities in review of the National Defense Authorization Request for Fiscal Year 2007. We are pleased to have with us today Lieutenant General Emerson Gardner, who is the Deputy Commandant for Programs and Resources; Lieutenant General James Mattis, the Deputy Commandant for Combat Development and Integration; Vice Admiral Lewis Crenshaw, who is the Deputy Chief of Naval Operations for Resources, Requirements, and Assessments; and Rear Admiral Mark Edwards, who is the Director for Warfare Integration. Welcome, gentlemen. Thank you for taking the time to be with us today. More importantly, thank you for your outstanding leadership and service to the country at a very crucial time.

These are challenging times as our Nation fights the global war on terror. The men and women under your leadership have distinguished themselves by their dedication to duty and their personal sacrifice. It's a privilege for me to say how deeply proud we are of our sailors and marines at their posts all over the world. It is not possible to express the full depth of our gratitude for their service and their families' sacrifice, and we just jointly hope you will take that back to them when you speak with them.

The purpose of today's hearing is to discuss the Navy and Marine Corps capabilities and force structure planned in this year's and future years' budgets. Our first priority must be to meet the demands current operations in Iraq and Afghanistan are placing on our forces. At the same time, we cannot lose sight of the fact that half of our fleet is underway on any given day, performing peacekeeping and humanitarian operations around the world and providing a level of security made possible only through global presence. As we size and shape the future force, we must retain our ability to sustain the current operations tempo while adding to our current capabilities in order to meet emerging threats to our national security.

The subcommittee is interested in your current direction regarding fleet operating concepts, your assessment of new capabilities, and your insights regarding the risks and challenges you must closely manage in developing the capabilities of the future fleet. In particular, we're interested in understanding the capabilities currently envisioned for Seapower 21 and your efforts to employ these capabilities through the Fleet Response Plan. We look for an update on both the Marine Corps lift requirements and the seabase concept. We're interested in your performance assessment of the MV–22 Osprey and the Expeditionary Fighting Vehicle programs as they approach full rate production. As well, we look for an update on the requirements for key programs at critical stages in their developments such as DD(X), the Littoral Combat Ship (LCS), the Multi-mission Maritime Aircraft, and the Heavy-Lift Helicopter.

Of particular interest, 1 year ago, this subcommittee expressed heightened concern with a course the fleet was on—in fact, is on regarding the steady decline in ship numbers and the associated implications regarding the capability that comes with numbers. The ability to maintain forward presence, the ability to respond in time of crisis, the stress placed on operating forces, their hardware, and the decline in our strategic industrial base. With today's Navy at its smallest size in decades, 281 ships, we concur with the Chief of Naval Operation's (CNO) conclusion that it is as small as it can get, and we are encouraged by his response to our concerns. The 313-ship Navy described in the report to Congress on the future naval force promises to turn around trends of the past 15 years and defines a clear requirements baseline for planning, budgeting, and execution by the Navy and the industrial base.

The CNO has been careful to describe his plan as a balanced solution addressing the competing elements of warfighting requirements, affordability, and the preservation of critical industrial base capabilities, and we support this approach. However, it's important that we understand the underlying assumptions, the things that

have to occur in order to support the Navy's analysis. Additionally, and perhaps most importantly, when we discuss the plan in the context of mission performance, we need to arrive at a common understanding of the risks that are inherent to the plan and prudent action that would help further mitigate those risks.

Again, gentlemen, thank you for joining us today. We're all looking forward to your testimony, and I'm happy to recognize Senator Kennedy for such remarks as he may wish to make.

STATEMENT OF SENATOR EDWARD M. KENNEDY

Senator KENNEDY. Thank you very much, Mr. Chairman, and I thank our panel for being here. I want to mention to our friends in the Marines just a program that Matthew Caulfield has worked up; we call it Helmets to Hardhats. We know that those are returning from Iraq and Afghanistan, and many of those have been out to sea. They have three times the unemployment, and this is a very creative program that they're working with the building trades. I've seen it. More than 180 service men and women that served in Iraq and in Afghanistan are involved in the program. Two hundred and fifty are on deck to come into it. So, it is interesting.

Not only do we have an example of people that are at the cutting edge in terms of wearing the uniform of the country, but also strongly committed to trying to make sure that we're going to meet our responsibilities to these young people afterwards. I just wanted to mention and commend that.

The buzzer has buzzed, Mr. Chairman. I'm just going to mention the areas that I would like to see if we can't have some of the questions answered. This is on the uparmoring of the Humvees and the adequacy of the funding for those programs and what will be the impact if the funding is not forthcoming in 2006 for 2007.

I'm interested in fire support systems and the DD(X) land attack destroyer. We have a change in the number of ships. We intend to buy only seven ships rather than the larger number of DD(X). There's a difference in the number of rounds being fired—the fire support requirements. What's the reaction of the marines on this? How are they going to compensate for it? We haven't seen it a great deal in terms of additional tactical air.

The seabasing, interested in the costs of that program. Perhaps we'll get a chance to talk a little later about how this is going to work in rough weather, how that is going to take place. Also, we ought to find out in that—since some of these requirements we want to find out what the needs and the cost would be.

Also, I've been interested—I think, as our Navy and Marines know in terms of the mine warfare capability, the problems we have, I understand, in remote mine hunting systems, we have ships that are involved in that, but they're slow in getting to the places where they're supposed to get. How are we balancing on this? We have been interested in this issue for some period of time, and we want to try and make sure that we're doing all that we should.

So, these are areas that we would be interested in. I also know we had the P–3 replacements, and I'd be interested in getting into where we thought we were going with those issues. There are a couple of others, but I know the bell has rung on this. These are

the primary areas that I hoped that we would be able to get to with the panel, and if we're having a series of votes, as I guess we are, Mr. Chairman.

Senator TALENT. I thank the Senator for his comments. Why don't we see if Admiral Crenshaw, if you couldn't give us your statement before we have to go vote because we have two in a row, so at least we can get at the end of the first one and then pick the second one up and then come right back.

STATEMENT OF VADM LEWIS W. CRENSHAW, JR., USN, DEPUTY CHIEF OF NAVAL OPERATIONS FOR RESOURCES, REQUIREMENTS, AND ASSESSMENTS

Admiral CRENSHAW. Mr. Chairman, Senator, and distinguished members, it's a privilege for me as the Navy's lead Resource, Requirements, and Assessments Officer to appear before you today to discuss the Navy and Marine Corps capabilities and force structures recently submitted in the President's budget. I'm joined by Admiral Mark Edwards to my right and of course, my colleagues, General Jim Mattis and General Emerson Gardner. We have provided written statements, and ask that you make those a part of the record. I am excited about this budget because it is the basis from which we implement the findings completed by the Quadrennial Defense Review (QDR) which includes fundings for the first eight maritime preposition future ships and implements some new and emerging mission sets such as riverine warfare, the Naval Expeditionary Combat Command, and maritime domain awareness.

Additionally, this budget implements the CNO's priorities of sustaining combat readiness, developing 21st century leaders, and finally, building a fleet for the future, upon which this hearing is focused.

Over the last year, we have employed a capabilities-based approach to calculate the size and composition of the future force required to meet the expected joint force demands. The analysis concluded that a fleet of about 313 ships is the force that's necessary to meet these demands with acceptable risk. This budget is a stepping stone to realizing that fleet.

As the 30-year shipbuilding plan evolves over the next year, it will produce an investment plan that is both executable and affordable based on balancing several factors: the naval force operational capabilities, risk, and the ability of the shipbuilding industrial base to execute the plan. Implementing this plan will be a challenge, but I believe it is achievable. It's essential that we control the cost of the ships that we build in order to maintain stability. To do this, we have instituted a series of boards at the highest levels of Navy leadership to come to grips with the steps necessary to control these costs. Rightsizing capabilities and adhering to cost and production schedules and common hull forms, common electronics, and open architecture software are all things that allow us to control costs. Determining the right size of the force has not stopped at the 313 ships. Right now, we're conducting a detailed review of naval aviation just as we did with shipbuilding.

Additionally, we continue to bring the Navy's longstanding tradition as a seabased force to the 21st century as a joint concept. The ongoing seabasing joint integration capability assessment being led

by the Joint Staff and our own complementary Navy and Marine Corps seabasing capability study, both expected to be completed later this year, will be two of the stars that we steer by as we bring this seabasing concept into the 21st century and the joint arena. These studies combined with the 313-ship plan and balanced between fiscal reality and measured risk will form the roadmap for the future naval force. We believe it is a capable force, and the requirements are stable and affordable.

I look forward to the future, your continued strong support, and thank you for your remarks today, and thank you for your consideration, and we're ready to answer questions.

[The joint prepared statement of Admiral Crenshaw and Admiral Edwards follows:]

JOINT PREPARED STATEMENT BY VADM LEWIS W. CRENSHAW, JR., USN, AND RADM MARK J. EDWARDS, USN

INTRODUCTION

Mr. Chairman and distinguished members of the Seapower Subcommittee, thank you for this opportunity to appear before you to discuss the Navy and Marine Corps capabilities and force structure requirements outlined in the 2007 President's budget.

Current Operations

We are a Nation at war. Today your Navy is postured worldwide, fighting the war on terror, deterring aggression by would-be foes, preserving freedom of the seas, and promoting peace and security. While numbers vary with daily operations, as of 20 March 2006, 129 ships are underway (46 percent) of which 92 (33 percent) are forward deployed. Navy has 5,244 Reserves currently mobilized.

There are over 10,000 sailors serving ashore throughout the Central Command area of responsibility including more than 3,800 in Iraq, and an additional 2,600 in Kuwait, that includes SEALs, Seabees, military policemen, explosive ordnance disposal, medical, intelligence, and civil affairs support personnel. Navy carrier and expeditionary strike groups continue to deploy in support of the global war on terrorism and conduct combat operations in Iraq and Afghanistan, along with humanitarian assistance/disaster relief missions such as tsunami relief and Pakistani earthquake.

At the same time, our Nation took advantage of the immediate access provided by naval forces to bring time-critical assistance to Hurricane Katrina and Rita victims in the Gulf Coast States. Twenty-three ships provided command and control, evacuation, and humanitarian support to military and civilian personnel in affected regions. Additionally, 104 Naval aircraft flew 1,103 sorties in support of search and rescue and other humanitarian assistance missions. These efforts resulted in the safe evacuation of 8,518 personnel and the rescue of an additional 1,582 people isolated by the disasters. In the weeks that followed, naval relief efforts provided a total of approximately 2.5 million pounds of food and water to people most severely affected by the disaster.

Sailors

The men and women of the United States Navy—Active, Reserve, and civilian, are the lifeblood and heart of the Service. They are the best, most talented, and capable team of professionals the Nation has ever assembled. Navy Active strength totals 356,258 and Reserves have 72,022 total. Our sailors believe in what they are doing and they are performing superbly in very challenging circumstances. From Iraq and Afghanistan to our humanitarian relief efforts, I am very proud of what they are doing to win the war and support our Nation and friends in time of need. They are smarter and better trained than at any time in our history. Your continued and generous support of our sailors has provided a force second to none in the world.

The fiscal year 2007 budget request maximizes our Nation's return on its investment by positioning us to meet today's challenges—from peacekeeping/stability operations to global war on terrorism operations and small-scale contingencies—and by transforming the force for future challenges.

Future Navy Force Structure

The Navy of the future must be capabilities-based and threat-oriented. The United States needs an agile, adaptable, persistent, lethal, surge-ready force. The Navy must seek to identify the proper strategic balance of capabilities to ensure we have the agility, speed, flexibility, and lethality to respond to any threat from any adversary, whether that threat is conventional or asymmetric in nature. Through agility and persistence, our Navy and Marine Corps team must be poised to fight irregular warfare against a "thinking enemy," able to act immediately against a fleeting target. The challenge is to simultaneously "set the conditions" for a major combat operation (MCO) while continuing to fight the global war on terrorism, with the understanding that the capabilities required for the global war on terrorism cannot necessarily be assumed to be a lesser-included case of an MCO. Our force must be the right mix of capabilities that balances persistence and agility with power and speed in order to fight the global war on terrorism while being prepared to win an MCO. To do so, it must be properly postured in terms of greater operational availability from platforms that are much more capable as a distributed, networked force. While the fabric of our fighting force will still be the power and speed needed to seize the initiative and swiftly defeat any regional threat, FORCEnet's pervasive awareness via command, control, communication, computers, intelligence, surveillance, and reconnaissance (C^4ISR) will enable us to achieve essential effects with less mass. Because of its access from the sea, the Navy and Marine Corps are focusing significant effort and analysis in support of joint combat power projection by leveraging the maneuver space of the oceans through Seabasing.

Seabasing—A National Capability

The Naval Power 21 vision defines the capabilities that the 21st century Navy and Marine Corps team will deliver. Our overarching transformational operating concept is Seabasing; a national capability, for projecting and sustaining naval power and joint forces that assures joint access by leveraging the operational maneuver of sovereign, distributed, and networked forces operating globally from the sea. Seabasing unifies our capabilities for projecting offensive power, defensive power, command and control, mobility, and sustainment around the world. It will enable commanders to generate high tempo operational maneuver by making use of the sea as a means of gaining and maintaining advantage.

Seabasing represents a complex capability, a system-of-systems able to move at will. Seabasing, enabled by joint integrated and operational concepts, is the employment of ships and vessels with organic strike fires (including naval surface fires support to the Marine Corps) and defensive shields of sensors and weapons, strike and transport aircraft, communications, and logistics. We will use the sea as maneuver space to create uncertainty for adversaries and protect the joint force while receiving, staging, and integrating scalable forces, at sea, that are capable of a broad range of missions. Its inherent freedom of movement, appropriate scalability, and sustainable persistent power provides full spectrum capabilities, from support of theater engagement strategies, to rapid response to natural or man made disasters, to military combat operations from raids, to swift defeat of enemies, to scale of major combat and decisive operations. The seabased Navy will be distributed, netted, immediately employable, and rapidly deployable, greatly increasing its operational availability through innovative concepts such as, the Fleet Response Plan (FRP) and Sea Swap. At the same time, innovative transformational platforms under development such as MPF(F), LHA(R), and High-Speed Connectors, will be instrumental to the seabase.

The FRP is the maintenance, training, and operational framework through which the Navy meets global combatant commander demand signals for traditional (e.g., global war on terrorism, major combat operations, humanitarian assistance/disaster relief, shaping and stability operations, counter piracy, etc.) and emerging mission sets (e.g., riverine warfare, Navy Expeditionary Combat Command, medical outreach). The FRP is mission-driven, capabilities-based, and provides the right readiness at the right time (within fiscal constraints). It enables responsive and dependable forward presence. With the FRP we can deploy a more agile, flexible, and scalable naval force capable of surging quickly to deal with unexpected threats, humanitarian disasters, and contingency operations. Sea Swap is an initiative designed to keep a single hull continuously deployed in a given theater, replacing the entire crew at 6-month intervals. The primary objective is to effectively and efficiently increase forward naval presence without increasing operating cost.

The Navy's Naval Surface Fires Support (NSFS) program was initiated as part of a larger strategy to meet U.S. Marine Corps (USMC) stated requirements for expeditionary maneuver warfare. However, NSFS will support all joint maneuver forces ashore at extended ranges and will provide responsive and persistent fire sup-

port for all other operations. The NSFS program will continue to be relatively affordable since fewer rounds will be required to achieve the desired effects on most targets due to greatly enhanced accuracy, precision, and lethality. Current program needs to meet NSFS requirements for the near term are being met by the MK 45 Mod 4 5″/62 gun, Naval Fires Control System, Extended Range Munitions, and a Supporting Arms Coordination Center (Automated) (SACC(A)). Mid-term requirements will be met by DD(X) and associated NSFS programs, 155-mm Advanced Gun System, and Long Range Land Attack Projectile. Finally, the long term requirements may be met by Electromagnetic Rail Gun System and Multi-Purpose Loitering Missile. The programs of record that we have today in our NSFS plan will be able to provide persistent fire support at longer ranges with better accuracy than the battleships were ever able to provide.

Seapower 21

We developed the Sea Power 21 vision in support of our National Military Strategy. The objective of Sea Power 21 is to ensure this Nation possesses credible combat capability on scene to promote regional stability, to deter aggression throughout the world, to assure the access of joint forces and to fight and win should deterrence fail. Sea Power 21 guides the Navy's transformation from a threat—based platform centric structure to a capabilities-based, fully integrated force. The pillars of Sea Power 21—Sea Strike, Sea Shield, and Seabasing—are integrated by FORCEnet. Sea Power 21 is structured by four pillars:

Sea Strike is the projection of precise and persistent offensive power. It leverages persistence, precision, stealth, and new force packaging concepts to increase operational tempo and reach. It includes strikes by air, missiles, and long-range gunfires.

Sea Shield is the projection of layered defensive power. It seeks maritime superiority to assure access, and to project defense overland. seabasing is the projection of operational independence. It provides the Joint Force Commander the ability to exploit expeditionary maneuver warfare, and the capability to retain command and control and logistics at mobile, secure locations at sea.

FORCEnet is the means by which the power of sensors, networks, weapons, warriors, and platforms are harnessed in a networked combat force.

This networked force will provide the strategic agility and persistence necessary to prevail in the continuing global war on terrorism, as well as the speed and overwhelming power to seize the initiative and swiftly defeat any regional peer competitor in MCO. Extending FORCEnet to our allies and partners in the form of multinational information sharing networks will represent an unprecedented level of interoperability for both global war on terrorism and MCO. The immeasurable advantage of this effort is the effective association of a "1,000-ship Navy" built from our own core capabilities combined with the coordinated efforts of our allies and partners in today's challenging global environment.

Fiscal Year 2006 Quadrennial Defense Review (QDR 06)

The fiscal and temporal realities associated with the design and development of modern, sophisticated weapons systems requires a significantly different approach to procurement and operation of our forces and resources. It is this dynamic that is propelling the Navy forward in the transformational arena. As recognized in the Quadrennial Defense Review, the size and capabilities of our force are driven by the challenges we will face. The capacity of the force is determined by its global posture in peacetime and the requirement to respond from this posture, as well as to surge, in crisis. In the case of our Navy, it is based upon the need for a ubiquitous but carefully tailored maritime presence that can provide the President and our allies with strategic options in support of dynamic security requirements. QDR 06 developed guidance to achieve the national defense and national military strategies and shaping the future force to improve capabilities and expand capacity to address four priorities:

- Defeat Terrorist Extremists
- Defending the Homeland in Depth
- Shaping the Choices of Countries at Strategic Crossroads
- Preventing Hostile State and Non-state Actors from Acquiring or Using Weapons of Mass Destruction

QDR 06 sets a 20-year course for the Department of Defense and provides an opportunity to continue to reshape the U.S. Armed Forces to meet current and emerging security responsibilities. The QDR 06 construct places new emphasis on the unique operational demands associated with homeland defense and the global war

on terrorism, shifts focus from optimizing for conflicts in two particular regions to building a portfolio of capabilities with global reach and serves as a bridge from today's threat-based force to a future capabilities-based transformational force.

Force Structure

Force structure requirements were developed and validated through detailed joint campaign and mission level analysis, optimized through innovative sourcing initiatives (FRP, Sea Swap, forward posturing) that increase platform operational availability, and balanced with shipbuilding industrial base requirements. This force structure was developed using a capabilities-based approach measured against the anticipated threats for the fiscal year 2020 timeframe.

The future Navy will remain seabased, with global speed and persistence provided by forward deployed forces, supplemented by rapidly deployable forces through the FRP. To maximize return on investment, the Navy that fights the global war on terrorism and executes maritime security operations will be complementary to the Navy required to fight and win in any MCO. This capabilities-based, threat-oriented Navy can be disaggregated and distributed world wide to support combatant commander global war on terrorism demands. The resulting distributed and netted force, working in conjunction with our joint and maritime partners, will provide both actionable intelligence through persistent, maritime domain awareness, and the ability to take action where and when a threat is identified. The same force can be rapidly aggregated to provide the strength needed to defeat any potential adversary in an MCO. The warships represented by this shipbuilding plan, along with the naval aircraft programmed in fiscal year 2007 President's budget, will sustain operations in forward areas longer, be able to respond more quickly to emerging contingencies, and generate more sorties and simultaneous attacks against greater numbers of multiple targets and with greater effect than our current fleet.

Employing a capabilities-based approach to calculate the size and composition of the future force required to meet expected joint force demands in peace and in the most stressing construct of the Defense Planning Guidance, along with detailed assessments of risk associated with affordability and instabilities in the industrial base, the analysis concluded that a fleet of about 313 ships is the minimum force necessary to meet all the demands, and to pace the most advanced technological challengers well into the future, with an acceptable level of risk.

Our force structure strategy is balanced between new construction and modernization for ships, and recapitalization and sustainment for aircraft. It is critical to our strategy for us to have vigorous modernization and sustainment programs to achieve the expected service life of our ships and aircraft in the face of rapidly escalating global threats using advanced technologies. Modernization and sustainment gets the most out of our capital investments.

During the last year, the Chief of Naval Operations established a focused effort to clearly define naval force structure requirements. The Navy recently submitted to Congress its 2007 Annual Long Range Plan for Construction of Naval Vessels. This plan begins our movement toward a more balanced force that meets the future national security requirements outlined in QDR 06 with acceptable risk and is designed to replenish the fleet, while stabilizing workload and funding requirements. As this 30 year shipbuilding plan evolves over the next year, it will produce an investment plan that is both executable and affordable based on balancing several factors: naval force operational capability; risk; and, the ability of the shipbuilding industrial base to execute the plan. This year the Chief of Naval Operations continues to define naval force structure requirements with a detailed review of naval aviation, in the same manner as the shipbuilding force structure requirements were established. This effort will define a naval aviation force structure which will meet the requirements outlined in QDR 06 with acceptable risk, is balanced with the 313 ship-plan, and stabilizes the industrial base.

Shipbuilding (30-Year Naval Force Size)

The 30-year shipbuilding plan and the resulting ship inventory, as outlined in the fiscal year 2007 Annual Long-Range Plan for Construction of Naval Vessels, represent the baseline as reflected in the 2007 President's Budget submission. There will be subsequent studies and analysis that will continue to balance affordability with capability and industrial base capacity. As part of the program objective memorandum development process, the Navy will be exploring alternative approaches to attaining the future force structure and ship mix while retaining the necessary capabilities for joint force operations. Overall, this plan reflects the Navy's commitment to stabilize the demand signal to the industrial base while still achieving the appropriate balance of affordability and capability in all ship classes. Also, although there is risk with this plan, and not a lot of excess capacity to accommodate the

unforeseen, we believe the risk is both moderate and manageable. Areas of special interest include:

Carriers

Eleven aircraft carriers and their associated air wings are sufficient to ensure our ability to provide coverage in any foreseeable contingency and do so with meaningful, persistent combat power. While the Navy requirement for carriers remains a minimum of 11 operational vessels, past delays in beginning the nuclear powered aircraft carrier (CVN)–21 program will result in the Navy having only 10 operational carriers in fiscal year 2013 and fiscal year 2014. This anomaly will require operational management of the remaining carrier fleet to mitigate the impact of this shortfall in carrier force level.

Attack Submarines

Despite the fact that the total SSN numbers drop below 48 between 2020 and 2033, our fast attack submarines will provide the necessary presence throughout their respective areas of operation and will be sufficient to sustain the minimum required deployed presence needed for major combat operations. Navy is pursuing a number of cost reduction initiatives intended to lower SSN 774 acquisition costs to $2.0 billion (fiscal year 2005 dollars) at a stable build rate of two-per-year commencing with fiscal year 2012 as cited in QDR 06.

Expeditionary

Our expeditionary capability provides the joint forcible entry capacity necessary to support the seabase as a lodgment point for joint operations but represents an acceptable decrease in Marine expeditionary brigade lift capacity. Myriad tactical, surveillance and reconnaissance, heavy lift, and support aircraft, as well as a variety of support ships, provide the Navy with sufficient capacity in each mission area.

A stable shipbuilding industry is essential to sustain minimum employment levels and retain critical skills to meet our requirements for an affordable and capable force structure. We must align the industrial base for long-term force development through advanced procurement and incentivized cost savings. We must build ships more efficiently, cost effectively, and quickly. To do this, we are committed to help provide stability in the shipbuilding plan and rigorously control requirements. Costs and production schedules must be kept within contractual limits. Industry must be viewed as a trusted partner while we provide a stable baseline upon which to plan.

The Navy continues to analyze operational requirements, ship designs and costs, acquisition plans and tools, and industrial base capacity to further improve its shipbuilding plan. Full funding and support for execution of this plan is crucial to transforming the U.S. Navy to a force tuned to the 21st century and its evolving requirements.

2007 President's Budget Shipbuilding Programs

There has been considerable activity within shipbuilding over the last year. Currently, there are 37 naval ships under construction in the United States: 1 CVN, 13 DDGs, 1 LHD, 4 LPDs, 9 T-AKEs , 2 Littoral Combat Ships (LCS) and 7 *Virginia* class submarines. Three additional LPDs have ongoing contract negotiations. In 2005 the Department delivered the lead ship for our newest class of amphibious transport dock ships, U.S.S. *San Antonio,* (LPD 17), initiating a new era of amphibious assault capabilities that are aligned to the littoral regions. In January 2006, the Navy commissioned LPD 17. The Navy also commissioned three DDGs in calendar year 2005. We laid the keel for the eighth ship of the LHD class and the second *Lewis & Clark* Auxiliary Dry Cargo & Ammunition ship (T–AKE), launched the lead ship T–AKE and commenced construction of the seventh *Virginia* class submarine. The Navy completed the engineered refueling overhaul (ERO) and conversion of the U.S.S. *Ohio* (SSGN 726), the first SSGN, and redelivered the submarine to the fleet in December 2005. In March 2005, we also completed the refueling complex overhaul (RCOH) of CVN 69.

Fiscal year 2007 will see the Navy's previous research and development efforts begin to bear fruit. The first increment of procurement of the two lead-DD(X) destroyers has been requested. Follow-on LCSs are programmed that will accelerate the Navy's capability to defeat anti-access threats close to shore. Transformation is most apparent in fiscal year 2007 where new construction increases to seven ships from the four in the President's fiscal year 2006 budget request. The total number of new ships procured over the Future Years Defense Program (FYDP) is 51, averaging 10 ships per year including DD(X), CG(X), LCS, T–AKE, *Virginia* class SSN, CVN 21, MPF(F), LPD 17, Joint High Speed Vessel, and LHA(R). Our fiscal year 2007 budget request calls for construction of seven ships: two DD(X) destroyers, one *Virginia* class submarine, one *Lewis & Clark* (T–AKE) class Auxiliary Dry Cargo &

Ammunition ship, the LHA 6 Amphibious Assault Ship, and two LCS. In addition, we have requested funding for advance procurement of the 10th and 11th *Virginia* class submarines, advance procurement of long lead material for the 9th *San Antonio* class Amphibious Transport Dock ship, advance procurement for CVN 21 construction, the second increment of CVN 70 RCOH funding, advance procurement for CVN 71 RCOH, ERO of an SSBN, funding for *Ticonderoga* class cruiser and *Arleigh Burke* class destroyer modernization, and the service life extension for six Landing Craft Air Cushion vessels.

2007 President's Budget Naval Aviation Programs

The fiscal year 2007 President's budget procurement plan stresses recapitalization and achieves significant advances in critical warfighting capability while continuing the transition from a "platform-centric" approach. Fiscal year 2007 President's budget improved critical warfighting capability while lowering operation and support cost. Fiscal year 2007 President's budget lays out $63.0 billion in aircraft procurement, Navy 1–4 for the procurement of 1,135 aircraft in the FYDP (fiscal years 2007–2011). There is $8.0 billion for 165 aircraft in fiscal year 2007.

The fiscal year 2007 President's budget produces financial efficiencies through tactical air integration, Active-Reserve integration, and Helo ConOps. These programs along with the pursuit of multi-year procurement contracts for MH–60S, MH–60R, and MV–22 will continue to produce efficiencies that aid in divestment from legacy airframes and consolidation of facilities.

Fiscal year 2007 will see the procurement of 109 Department of the Navy (DON) Joint Strike Fighter (JSF) aircraft in the FYDP. Marine Corps initial operating capability (IOC) remains fiscal year 2012 while Air Force and Navy IOCs remain fiscal year 2013. In fiscal year 2007 the F/A–18E/F program will be in its third year of procuring 210 aircraft through a multi-year procurement buy, and remains on cost and ahead of schedule. The Multi-Mission Maritime Aircraft (MMA) program will procure the first P–8A in fiscal year 2010 with an eye towards transitioning the MPRA community between fiscal years 2013 and 2019. The procurement strategy for UH–1Y aircraft is now new-build aircraft versus remanufacture. This eliminates the need to remove aircraft from Operation Iraqi Freedom/Operation Enduring Freedom for remanufacture. USMC Heavy Lift Replacement (HLR/CH–53K) program is fully funded for fiscal year 2015 IOC.

Fiscal year 2007 President's budget plans for $24.7 billion FYDP with $6.3 billion in fiscal year 2007 for naval aviation research and development. These funds ensure future naval aviation transformation and recapitalization. Broad Area Maritime Surveillance (BAMS) Unmanned Aircraft System (UAS) is funded for technical risk reduction activities and milestone B documentation preparation through fiscal year 2007; IOC is planned for fiscal year 2013. E–2D is currently in system design and development with milestone C in fiscal year 2009 and IOC in fiscal year 2011. Fire Scout is currently in engineering and manufacturing development (EMD). Fiscal year 2007 President's budget implements and funds a strategy that retires Navy EA–6Bs and replaces them with EA–18G.

Future Maritime Patrol

The aging P–3C fleet continues to provide critical broad area maritime and littoral anti-submarine warfare (ASW), anti-surface warfare, and intelligence, surveillance and reconnaissance (ISR). P–8A MMA will provide P–3 replacement, but P–3C sustainment measures are needed until MMA reaches full operational capability (FOC) in fiscal year 2019. The 2007 President's budget funds P–3C airframe sustainment measures which include inspections and pre-emptive repair or replacement of critical structural components to extend aircraft service life. The sustainment program will sustain the P–3 until MMA FOC. MMA achieved milestone B in May 2004 and entered system development and demonstration (SDD) in June 2004. Boeing was awarded a $3.9 billion contract to design the aircraft, integrate subsystems, and build up to seven test aircraft. System requirements review, system functional review, and preliminary design review have been completed, and MMA has entered the detailed design phase. Milestone C is planned for fiscal year 2010 and IOC in fiscal year 2013. The MMA program has executed on time and on budget.

Unmanned Aircraft System

The DON is developing, acquiring, and fielding UAS technologies as a key transformational initiative supporting knowledge and information superiority, persistent surveillance, and time sensitive operations. Investments are being made in future UAS capabilities while maintaining current war supporting capabilities such as Marine Corps' legacy Pioneer UAS. ISR capabilities addressing improved battlespace management, situational awareness, and persistence are the primary development

focus to support the warfighter. The Vertical Takeoff and Landing UAV (VTUAV) system-Fire Scout is in test and development and will reach IOC in fiscal year 2008, providing support for core LCS mission areas. Two Global Hawk maritime demonstrators will be delivered in 2006 and will support fleet experiments and concept of operations development for the BAMS UAS to be fielded in fiscal year 2013. Dragon Eye, a lightweight, manportable, modular system designed to give the small unit leader a reconnaissance and surveillance capability to see over the next hill or building has been fielded in the Marine Corps. Finally, the Navy is supporting an unmanned combat aircraft system program to develop a carrier based UAS system that provides ISR and operates in the same battlespace as carrier strike aircraft. Interoperability continues to be a key element in the development of our UASs. The Tactical Control System (TCS) is a standards-based, interoperable, open system architecture solution that includes implementation of The North Atlantic Treaty Organization (NATO) Standardization Agreement (STANAG) 4586. TCS and NATO STANAG 4586 represent the foundation for our UAV interoperability. In addition, applicable DON UAS will comply with Congressional direction regarding use of Tactical Common Data Link (TCDL). The VTUAV system will IOC with TCDL, and the Pioneer program is funded to retrofit to meet this requirement.

Army announced Lockheed-Martin ACS contract termination 12 January 2006. The fiscal year 2007 President's budget sustains EP–3 until a replacement capability is fielded. Army and Navy, in coordination with Air Force, are co-leading an Office of the Secretary of Defense-directed ISR gap analysis study.

SUMMARY

Our mission remains bringing the fight to our enemies. The increasing dependence of our world on the seas, coupled with growing uncertainty of other nations' ability or desire to ensure access in a future conflict, will continue to drive the need for Naval forces and the capability to project decisive joint power by access through the seas. The increased emphasis on the littorals and the global nature of the terrorist threat will demand the ability to strike where and when required, with the maritime domain serving as the key enabler for U.S. military forces.

Accordingly, we will execute the global war on terrorism while transforming for the future fight. We will continue to refine our operational concepts and appropriate technology investments to deliver the kind of dominant military power from the sea envisioned in Sea Power 21. We will continue to pursue the operational concepts for seabasing persistent combat power, even as we invest in technology and systems to enable naval vessels to deliver decisive combat power in every tactical and operational dimension. We look forward to a future that continues the strong partnership with Congress that has brought the Navy many successes today. We thank you for your consideration.

Senator TALENT. Thank you, Admiral. We probably have a couple of minutes left, and I think I won't cut it too fine. Senator, I think we'll adjourn the hearing, go over and vote, and then come on back. We want to welcome the students who are with us today. If you can stick around until the questions, that's when the fun really starts. So, I'll recess the hearing, and then we'll go over and vote. [Recess.]

All right, thank you for your patience. We have another vote coming up in a few minutes, and Senator Kennedy agreed I would come back and continue with the statements, and he will try to come back. He has a conference committee he has to attend, but if he can't, and to the extent I don't cover his questions, we will just submit his for the record. Thank you, Admiral Crenshaw, for your testimony. General Gardner, I have you next on the list. We appreciate your being here.

STATEMENT OF LT. GEN. EMERSON N. GARDNER, JR., USMC, DEPUTY COMMANDANT OF THE MARINE CORPS FOR PROGRAMS AND RESOURCES

General GARDNER. Mr. Chairman, thank you for this opportunity to appear before you today. As the Marine Corps' Deputy Com-

mandant for Programs and Resources, I am responsible for creating a budget request that provides necessary funding to develop our future capability needs. Our fiscal year 2007 budget request enables your Marine Corps to respond to current national demands even as we aggressively transform our forces to prepare for the uncertainties of the future.

However, our baseline modernization and transformation accounts cannot bear the unfunded costs associated with sustaining the global war on terror, which is why the administration is requesting funds in the fiscal year 2006 supplemental to fund our cost of war operations and to address our need to reset our forces. Our fiscal year 2007 budget and our fiscal year 2006 supplemental request work together to sustain readiness while providing opportunity for investment and resetting continued modernization of the Corps. On behalf of all the marines, I thank the committee for your continued support and look forward to answering your questions.

[The joint prepared statement of General Gardner and General Mattis follows:]

JOINT PREPARED STATEMENT BY LT. GEN. EMERSON N. GARDNER, USMC, AND LT. GEN. JAMES N. MATTIS, USMC

Chairman Talent, Senator Kennedy, distinguished members of the subcommittee, thank you for the opportunity to appear before you to discuss Marine Corps maritime and aviation requirements. Your Marine Corps is entering the fifth year of what has been aptly termed The Long War and because of the support received from Congress, Marines continue to demonstrate that they are an expeditionary force in readiness—Most Ready When the Nation is Least Ready. Scalable, flexible, and adaptable for peacetime crises and always innovative for future challenges, your Corps' number one priority is fighting and winning battles.

On behalf of all marines, we thank the committee for your continued support and commitment to the readiness of your Marine Corps.

CREATING STABILITY IN AN UNSTABLE WORLD

We remain the Nation's premier expeditionary combat force-in-readiness. We are primarily a naval force whose strength is our ability to access denied areas from great distances. We project Marine forces from land or seabases for operations as part of a joint or combined force. We provide defense of the homeland by operating from forward deployed locations throughout the world. We sustain our deployed forces for extended periods of time.

We fight across the spectrum of conflict. However, we believe that our future will be characterized by irregular wars. The enemy we are fighting today is different than those in our recent past. He is a transnational actor with no allegiance to sovereign nations or respect for conventional rules of war. To address this threat, we focus on warfighting excellence in everything we do. A guiding principle of our Corps is that we fight as combined-arms teams, seamlessly integrating our ground, aviation, and logistics forces adapted to the complexities of irregular war. We exploit the speed, flexibility, and agility inherent in our combined-arms approach to defeat irregular, traditional, and emerging threats to our Nation's security.

Every marine is a rifleman and a warrior—our link to the past and a highly relevant key to the future. We train and educate our marines to think independently and act maturely and aggressively, with speed and initiative, and to exploit the advantages of cultural understanding. We thrive in the chaotic and unpredictable environments in which our forces are employed. We are committed to providing relevant, sustainable, and sturdy forces to the joint task force commanders. Marines are intensely devoted to each other and the defense of our Nation.

QUADRENNIAL DEFENSE REVIEW (QDR)

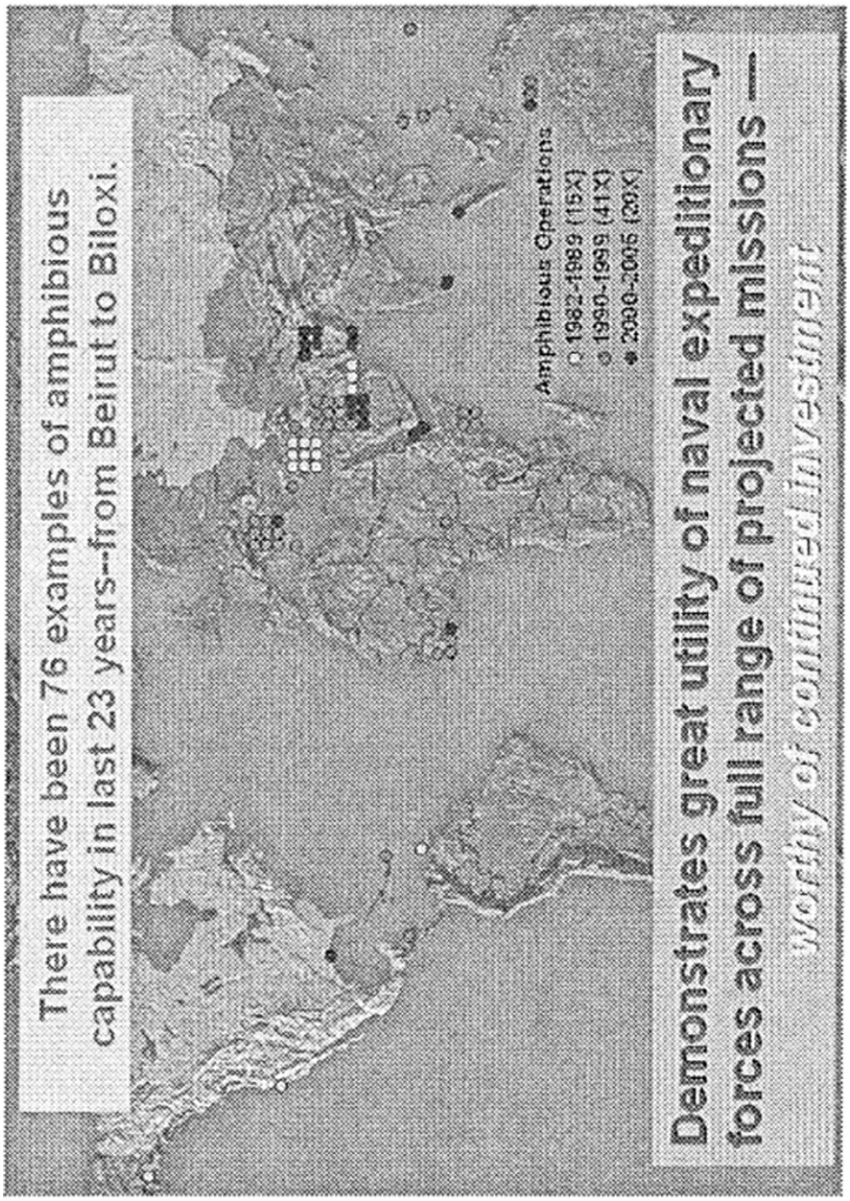
The 2006 QDR report highlights that seabasing and flexible options for expeditionary maneuver are not only relevant; they are critical to our strategic goals. The QDR defines achieving global freedom of action as one of the four key objectives in the National Defense Strategy. To increase our Nation's freedom of action, we need to focus on the following four areas: operational readiness, global reach, building

partnership capacity, and strengthening alliances. Seabasing plays a significant role in all four of these areas, but makes its greatest contributions in enhancing global reach. The QDR specifically calls for more flexible basing and indirect operational approaches. With its characterization of today's security environment as an era of uncertainty and surprise, marked by a shift from static defense and garrison forces to mobile expeditionary operations, the QDR suggests more emphasis be placed on agility of response rather than speed of response. It seeks tailored deterrence by shifting from responding after a crisis starts (reactive) to preventive action so that problems do not become crises (proactive). This requires an agile and integrated joint force that is more rapidly deployable and more capable against a wider range of threats. Lastly, the QDR highlights the need to develop the capability "to deploy rapidly, assemble, command, project, reconstitute, and re-employ joint combat power from all domains to facilitate assured access." If we as a Nation desire to assure we can gain access at a time and place of our choosing, it is imperative that we continue to invest in and further advance our Nation's seabasing capabilities to achieve global freedom of action. There is no better way to reassure our friends around the world while confronting our enemies with a compelling threat.

SEABASING—A NATIONAL CAPABILITY

America's ability to use international seas and waterways, as both maneuver space and an operating base unconstrained by foreign veto, allows our naval forces to project combat power into the littoral regions. The littorals contain more than half the world's population and more than 75 percent of its major urban areas. Highly mobile and ready for combat, our forward-deployed expeditionary forces are critical instruments of U.S. diplomacy and central components of joint military force packages designed to quickly contain a crisis or defeat an emerging threat. The Navy and Marine Corps team can project unmatched amphibious forcible-entry capabilities and provide a persistent combat capability from a mobile seabase, thus reducing the U.S. logistical "footprint" ashore. By exploiting our Nation's premier asymmetric advantage—command of the sea—the Navy and Marine Corps can loiter over the horizon and project, protect, and sustain integrated joint warfighting capabilities, provide muscular yet agile support for the Commander in Chief's diplomatic efforts, and ensure operational independence for combatant commanders across the full spectrum of warfare.

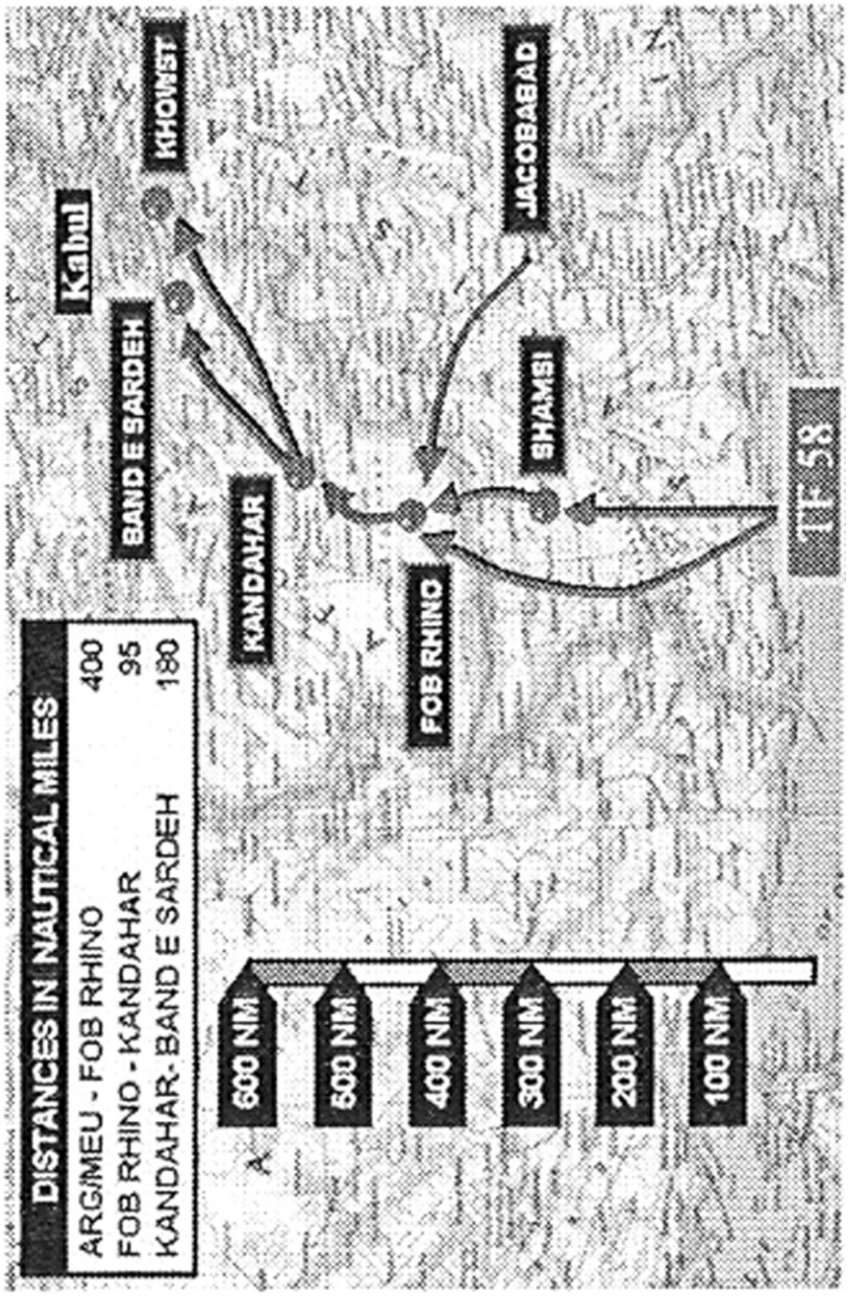
Today and tomorrow, a most visible element of assurance to allies and deterrence to foes will be naval forward presence, including capabilities of Marine Expeditionary Units (Special Operations Capable) (MEU(SOC)) embarked, protected, and sustained by Expeditionary Strike Group (ESG) ships. These units provide the combatant commanders with forward-deployed adaptive units that can conduct a variety of quick reaction, seabased, crisis-response options against traditional challenges or against irregular foes. To appreciate our Nation's ability to maintain global presence, we only need to reflect back 23 years. From Beirut to Biloxi, our Nation has responded with amphibious forces to 76 global events ranging from humanitarian relief to combat operations, each of which provides an excellent example of our current capabilities.



The current force-sizing construct requires the capability to respond to two swiftly defeat the efforts (SDTE)—each of which requiring a Marine Expeditionary Brigade (MEB) size force. One of these crises may become a decisively defeat campaign, bringing our most powerful force to bear, the Marine Expeditionary Force (MEF), for highly-capable, lethal, mobile, and sustained operations. This requires 30 operational available amphibious warships (10 of which must be large deck amphibious ships capable of supporting the aviation combat element of the assault echelon).

The future Seabasing effort will allow more efficiency in the generation of our expeditionary brigades, enabling the forces to flow directly from home bases to the for-

ward, on-scene, Seabasing ships, while leveraging the Sea Shield force protection for off-shore, less vulnerable operating bases. As a crisis builds, one to two forward deployed MEUs serve as the "leading edge" of the MEB, conducting advanced force and limited objective, initial entry/response efforts, while the remainder of the strike power of the MEB is assembled on scene as part of the Maritime Preposition Force (Future) (MPF(F)) Seabasing echelon. As "proof of concept," our Nation's strength and capability to operate in an anti-access environment was tested during Operation Enduring Freedom (OEF). The war against the Taliban and al Qaeda in Afghanistan provided a harsh dose of reality for those who assumed traditional threats and the availability of friendly, convenient land bases to project airpower and land forces.



In the early phases of OEF, two forward-deployed MEUs and associated amphibious shipping formed Task Force 58 and projected the first major U.S. "conventional" combat units into Afghanistan—more than 350 miles from its seabase of amphibious shipping. Yet, their operations were far from traditional or conventional in tone. We believe recent experiences, such as Turkey's prohibition of passage for the

4th Infantry Division to open a northern front in the early stages of Operation Iraqi Freedom (OIF), are compelling insights for how operations must be conducted in the future. When negotiating for the 4th Infantry Division to transit Turkey, the U.S. offered to pay a multi-billion dollar option for a one time passage when this funding could have been applied to our Nation's future warfighting investments such as MPF(F). In the globalized world and information age, "all politics are local" remains a constant theme but now has strategic implications. Our naval forces, operations off-shore, are more relevant now than ever before, when even friendly nations may deny U.S. forces land basing and transit due to their own sovereign interests.

DISTRIBUTED OPERATIONS

The attributes of sea power are extremely useful to the combatant commanders. However, this operational capability must also be matched by increased tactical capabilities that enhance the effectiveness of our "boots on ground" to enable operational maneuver and to create stability, especially in irregular and counter-insurgency operations where decisive combat has shifted to ground combat against irregular forces. After a quarter century of unwavering commitment to our maneuver warfare philosophy, marines are harvesting a generation of junior officers and noncommissioned officers who are better prepared to assume much greater authority and responsibility than traditionally expected at the small-unit level. As an additive tactic and complementary capability to our Seabasing concept, distributed operations describes an operating approach that will create an advantage over an adversary through the deliberate use of wider dispersion and coordinated, interdependent, tactical actions enabled by enhanced communications, increased access to joint fire support, as well as by enhanced combat capabilities at the small-unit level. The essence of this concept lies in enhanced small units gained through taking advantage of our high quality, combat experienced marines and the incorporation of emerging technologies which will support them.

Once implemented, a networked Marine Air-Ground Task Force operating in a distributed operations manner will disperse, mass, and disperse again to exploit opportunities the enemy offers. The integration of new doctrine, force structure, training, equipment, personnel policies, and leader development initiatives will afford our tactical and operational commanders a significantly enhanced weapon in the increasingly sophisticated global war on terror.

MARINE CORPS MARITIME LIFT AND NAVAL SURFACE FIRES REQUIREMENTS

In order to support Joint Forcible Entry Operations (JFEO), the Marine Corps shipbuilding requirement is two amphibious MEB Assault Echelons (AE) plus two (MPF(F)) MEBs (or equivalent as indicated below).

- 30 operationally available amphibious ships, of which 10 must be operationally available big-deck aviation-capable ships to support two MEB AE.
    - Note: operationally available—minimum amount of ships required to conduct the mission. Planning factors will account for ship maintenance cycles.
    - Minimum of 9 LPD–17s within the LPD program to mitigate risk incurred by limiting each MEB AE to 15 amphibious ships.
        - Both discrete and volumetric analyses have been conducted to load the "2015 MEB AE" on amphibious ships. Seventeen ships (five LHD, five LPD–17, five LSD–41, two LSD–49) are required, however, the Marine Corps has accepted risk with a 7-percent reduction in MEB equipment by self limiting to 15 ships per MEB AE.
        - Limiting the LPD–17 production line to nine ships places the Marine Corps at grave/significant risk by further decrementing the MEB equipment for the assault echelon.
- 2 MPF(F) MEB squadrons or one MPF(F) squadron plus two legacy Maritime Pre-position Ship (MPS) squadrons.
    - MPF(F) squadron will consist of 14 ships with two types using proven amphibious hull designs: 1 LHD, 2 LHA(R), 3 T–AKE, 3 large, medium speed, roll-on/roll-off (LMSR), 3 Mobile Landing Platform ships, and 2 legacy "dense-pack" maritime prepositioning ships.
    - We are not ready to commit MPF(F) to forcible entry in the assault echelon without further experimentation in the following areas:
        - Civilians (merchant marines) manning MPF(F) and associated legal implications.

- Survivability, preposition loading, and continued on-load/off-load experiments, etc.

- Naval Surface Fire Support (NSFS) that meets the Marine Corps requirement of "24/7," all weather, long range naval surface fires in support of amphibious operations from the sea with continuous striking power and volume of fires out to a range of 63 nautical miles (threshold) to 110 nautical miles (objective) from ships at sea.
- LHA/LHD recapitalization plan.
- Recapitalization plan for LSD line to bridge from last LPD to first LSD replacement (must account for LHA(R) design of not having a well deck).

Marine Corps Aviation Requirements

Rotary Wing	Fixed Wing	UAS
360 MV-22	**420** F-35B (JSF)	Tier III Initial Capabilities Document (ICD) for VUAS approved by the Joint Requirements Oversight Council (JROC) Dec 05. Planning for **11 systems (4 air vehicles per sys)**
156 CH-53K	**51** C-130J	
180 AH-1Z		
100 UH-1Y		

- We have lost a total of 27 aircraft in support of OIF/OEF/Horn of Africa (HOA) operations. Until last fall (28 Sep 05—MV–22 full rate production decision), we have not had a "hot" manufacturing line from which to replace these losses because we are in the midst of recapitalizing our legacy fleet.
- With only one active production line for our existing rotary-wing aircraft, addressing near-term inventory shortfalls for this generational war requires revisiting the production ramp-up rates for the procurement of the MV–22, KC–130J (procure multi-year), H1Y/Z aircraft and staying on track with the development of the CH53K.
- F–35B (JSF)—preserve Initial Operational Capability (IOC) date of fiscal year 2012 in order to replace legacy aircraft operating beyond the Expected Service Life (ESL).

FISCAL YEAR 2007 AND FUTURE YEARS DEFENSE PROGRAMS—MODERNIZATION AND TRANSFORMATION

While we continue to focus our efforts on sustaining the current requirements for global war on terror, we must not sacrifice our modernization and transformation initiatives in the process. Our modernization and transformation accounts can no longer bear the unfunded costs associated with sustaining the global war on terror, which is why the administration is requesting funds in the fiscal year 2006 supplemental to continue addressing the resetting of our forces. Our modernization and transformation initiatives must plan for the procurement of replacement equipment that will enable our Corps to be ready for future conflicts and contingencies.

The readiness of our Corps remains dependent on our ability to continue to attract and enlist young men and women dedicated to the preservation of freedom and to service to our great Nation. We will continue to inspire, train, and equip them for success. Our fiscal year 2007 budget and our fiscal year 2006 supplemental request work together to address our essential operational and maintenance requirements to sustain our readiness, while providing opportunity for investment in the resetting and continued modernization of our Corps. We will dedicate these resources to the destruction of our enemies and stability for our friends and thank you for this support. Your unwavering support is deeply appreciated.

SPECIFIC RESPONSES TO THE SUBCOMMITTEE'S REQUEST FOR INFORMATION

For the purpose of this statement, we have emphasized Marine Corps maritime lift, naval surface fires support, and aviation requirements. Additionally, we have provided Enclosure (1) for the responses to the subcommittee's specific request for information.

CONCLUSION

Your marines are fully dedicated to serving and protecting this Nation. Their bravery, sacrifice, and commitment to warfighting excellence are well known to you. We recognize we have an essential mission, and that we have the solid backing of the American people. The Marine Corps fully understands that our greatest contribution to the Nation is our high-level of readiness across the spectrum of conflict.

We see Seabasing as a national capability that regional combatant commanders can immediately apply to emerging threats transcending all levels of warfare. No longer will we need to rely on critical airfields and seaports in the initial phases of conflict. On behalf of all marines, we thank the committee for your continued support that has made us more effective in the fight, saved lives, and will allow us to protect this great Nation in an uncertain future.

SASC Seapower Subcommittee
"Future Requirements"
29 March 2006

QDR 2005 relating to Navy and Marine Corps future force structure

- Reorients DoD capabilities and forces to be more agile, prepare for asymmetric challenges and hedge against uncertainty.
- Implements DoD enterprise-wide changes to ensure organization structures, processes and procedures support strategic direction.
- Navy/USMC programmatic points:
  - Stabilize USMC endstrength at 175,000 active component and 39,600 reservists by 2011.
  - Establish MARSOC at approximately 2,600 Marines and sailors.
  - Procure first 8 MPF(F) ships.
  - "Completes" multi-year KC-130 procurement: 8 KC-130Js by FY 2008.

Requirements for current and future force structure

- Force Structure Review Group (FSRG)
  - In 2004, we conducted an extensive Total Force Structure Review recommending approximately 15,000 structure changes to improve the Marine Corps' ability to meet the long-term needs of the Global War on Terror and the emerging requirements of the 21st Century.
  - This effort was end strength and structure neutral—offsets to balance these increases in capabilities come from military to civilian conversions and the disestablishment and reorganization of less critical capabilities.
- Capabilities Assessment Group (CAG)
  - The CAG will focus on our operating forces to ensure we have properly incorporated lessons learned on the battlefield, QDR guidance, and the MARSOC standup in order to properly assess our future endstrength requirements.
  - The CAG commenced the assessment earlier this month (March 2006) and is expected to release an initial report to the Commandant of the Marine Corps by June 2006.

Tactical Wheeled Vehicle Armor

- The Army/Marine Corps Board (AMCB) has been a valuable forum to harmonize Army and Marine Corps "long term" tactical wheeled vehicle procurement plans over the last year. In September 2005, the AMCB established a joint tactical wheeled vehicle program, focused on near-term joint requirements.

- The objective of these efforts is to define requirements for a Joint Light Tactical Vehicle (JLTV) that reflect both an appropriate response to the operational threat, and the best state of industrial art in meeting the survivability, mobility and network enabling needs of the joint force.

- Current plans target a Milestone B decision not later than October 2007 that supports an incremental acquisition strategy for the light fleet. We are "inventing" a new vehicle and working hard, but this takes time.

- Near and mid-term vehicle armor strategies:

  - We are nearing completion of our current/near-term requirements. All Marine Armor Kits (MAKs) requirements for our base HMMWV and A2 models were achieved in November 2005. The MTVR Armor System (MAS) requirements will be completed within two months. Our M1114 operational requirement will be complete in July 2006 (2,502 vehicles) leaving 312 sustainment vehicles to be delivered by November 2006 for a total of 2,814 M1114s to meet the MARCENT requirement.

  - The Marine Corps has fielded the 26 required Hardened Engineer Vehicles (Cougar). The Marine Corps will procure 39 JERRVs (6 have been delivered, 8 are enroute to Iraq with final deliveries scheduled for June 2006).

  - The Army and Marine Corps have been working closely together for a mid-term solution through the M-1151/2 designed to replace our base HMMWV and A2 models that have reached the end of their service life. The M-1151/2 is the bridge to a JLTV solution.

Progress in fielding EFV

- 15 EFVs have been produced for a comprehensive Milestone C Operational Assessment (OA) that began in January 2006 at Camp Lejeune and includes gunnery, land operations, Force on Force and amphibious operations testing.

- A Low Rate Initial Production (LRIP) decision is planned for late 2006. A full rate production decision and Initial Operational Capability are planned for the Fall of 2010.

- The planned fiscal commitment within the FYDP (FY 07-11) for the EFV program is $522M in R&D, $2.6B in procurement.

Progress in fielding MV-22

- Full rate production decision obtained 28 Sep 05.
- The FY2007 budget requests $1.5B of procurement in funding for 14 MV-22s, associated spares, aircraft retrofit, and Economic Order Quantity investments supporting FY 2008 – 2012 multi-year procurement and $268M of RDT&E for continued development, testing and evaluation.
- The V-22 Program will procure a total of 16 aircraft in FY 2007, 14 MV-22s and 2 Air Force funded CV-22s. The FYDP reflects a program total of $10.1B for the V-22 Osprey.
- To date, 29 Block A and 1 Block B aircraft have been procured to support developmental testing, Operational Evaluation (OPEVAL), training and initial fleet fielding which is underway at Marine Corps Air Station New River, North Carolina.
- Two squadrons have commenced the transition from the 40 year-old CH46E to Block B MV-22Bs, the first achieving IOC in FY 2007.

Status of VH-71 Executive Helicopter

- The VH-71 program will use an evolutionary acquisition approach through a two-part incremental development to deliver a secure, survivable and capable vertical lift aircraft while providing uninterrupted communications with all required agencies.
- The FY 2007 Budget requests $682.6M of R&D funds for System Development and Demonstration (SDD) efforts on the VH-71 program.
- IOC date was established as late 2009. IOC will be achieved upon delivery of four of the Increment 1 (Pilot Production) aircraft. The total VH-71A procurement quantity is 26 aircraft (23 operational, 3 test articles).

Impact of delays to UH-1/AH-1

- We have lost a total of 19 H-1 aircraft since GWOT began, 8 of which were lost in CONUS and 6 AH-1Ws and 5 UH-1Ns were lost in direct support of OIF/OEF/HOA operations (4 of these H-1s were losses due to lack of engine power in demanding high altitude and/or reduced visibility environments).
- Until last Fall (28 Sep05 - MV-22 full rate production decision), we have not had a "hot" manufacturing line from which to replace these losses because we are in the midst of recapitalizing our legacy fleet.
- Concerns have been raised relative to program cost and schedule. A restructure of the program has been proposed by the Program Office to address these concerns, and technical issues we believe will be carried forward from OPEVAL.

- ASN (RDA) directed an independent review of the proposal and an assessment of alternative acquisition strategies before seeking approval from OSD to proceed with the program.

- The review shall address the risks of the test program, production costs and schedule estimates.

- The third LRIP lot will be ready to award in April 2006 once the independent assessment of the program has been completed.

➢ Due to GWOT utilization rates and loss of aircraft, it is imperative that the H-1 program achieve an acceptable cost/schedule profile. Should a negative decision for the H-1 program be attained, USMC requirement remains for a light utility and attack helicopter program of record.

Vision for Unmanned Aerial Systems (UAS) future capabilities

➢ February 2005 a consolidated Marine Corps UAS approach was developed (approved by the Marine Requirements Oversight Counsel (MROC)) for a "Three Tier" concept.

- Tier I – Supports the Battalion and below
  Current – Dragon Eye UAS (man-packable system) and a Defense Advanced Research Projects Agency (DARPA) test (ongoing)
  Follow on Tier I UAS – Joint Army/SOCOM/USMC system

- Tier II – Supports Division/Regiment/Battalion/Marine Expeditionary Units
  Current – OIF ISR Services (Boeing Scan Eagle)
  Follow on – Compete OIF ISR Services
  Building Joint Tier II POR (USMC/USAF/USN/SOCOM)

- Tier III – Supports JTF/MAGTF Commanders
  Current POR – Pioneer UAS
  Follow on – VUAS IOC 2015
  JROC approved VUAS ICD Dec 05

Senator TALENT. That was expeditious. Thank you. You'll never, however, be able to serve in the Senate if you can't talk longer than that. [Laughter].

General Mattis, would you care to go next, please?

STATEMENT OF LT. GEN. JAMES N. MATTIS, USMC, DEPUTY COMMANDANT OF THE MARINE CORPS FOR COMBAT DEVELOPMENT AND INTEGRATION

General MATTIS. Mr. Chairman, General Gardner's and my written statement has been submitted, and I ask that it be accepted for the record. The Marine Corps is heavily committed to this war having taken over 6,000 killed and wounded in action since 2001. While we remain fully engaged in this fight, we're also adapting and modernizing for future fights in this long war. From adaptive concepts to innovative training and the incorporation of focused technologies, we're transforming our Corps even while maintaining near-term readiness from seabasing to distributed operations. We're posturing the Corps for its role from forcible entry to irregular warfare against an elusive foe.

Thanks to our extremely hard-working recruiters and your support, we continue to enlist high-quality young men and women into our ranks, and we are retaining our combat veterans at extremely high levels. With your continued support, we will ensure our marines remain an elite force fully prepared for tomorrow's challenges.

Programs such as the MV–22 tiltrotor, the fighting amphibious ships of the LPD–17 class, the expeditionary fighting vehicles, the KC–130J, CH–53K, and others form the composite of capabilities that carry our troops against the enemy. Alongside our shipmates in the Navy, we marines are confident of our future capabilities. With 30 operationally-available amphibious ships, 10 of which need to be large-deck amphibs, the advent of the Maritime Prepositioning Force of the future squadrons and associated programs, we will be prepared for the next fight. I thank you for your strong support over this last year and look forward to your questions, sir.

Senator TALENT. Thank you.

Admiral Edwards.

Admiral EDWARDS. Sir, as the Director of Warfare Integration, I work for Admiral Crenshaw, and his statement is one and the same as mine.

Senator TALENT. Tremendous. I appreciate your comments and your summing them up. I guess I will go right to my questions.

Admiral Crenshaw and Admiral Edwards, the Navy's report to Congress, which outlined the plan for a 313-ship Navy, emphasizes the importance—really the critical nature of budget stability and concludes that we're going to need at least $13.5 billion per year in the shipbuilding and conversion, Navy (SCN) accounts, at least on an average in order to be able to sustain that number of ships. Now, I completely agree about the criticality of budget stability. I hope we can do it for $13.5 billion. But that is an ambitious figure. You know that the Congressional Budget Office (CBO) has estimated we're going to need more than that. We're at $8.7 billion now, which means just to get to the $13.5 billion figure, we need an almost $5 billion increase in the SCN account. What are the Navy's designs or plans for fencing the necessary funding in the future? Where are you going to get it from?

Admiral CRENSHAW. Senator, that is a great question. People ask me that all the time in and out of the Navy.

Senator TALENT. To the extent that you can't give specifics, how confident are you that you can get it, and what, at least, is your general thinking about where you're going to go for it?

Admiral CRENSHAW. Yes, sir. I think to kind of simplify the things, our basic strategy here is based on number one, as you mentioned, being specific about the requirement, which is about the 313 number that Admiral Mullen has produced and then being constant on our demand on that requirement. In other words, not changing the numbers around. One of the things that causes ships to cost more money, quite frankly, is when we move them around. We have not been very good about that in the past as we moved the ships around. If you move ships from one year to the next, it always costs more. Sometimes I want to move it back, and then it costs me even more money, and it's almost like lost cost. So, we realize we really have to stabilize the requirement and then stabilize what we have in the plan to buy. We worked very hard to do that in the 2007 budget so that we didn't change from one year to the next. We're going to continue our commitment to not changing those numbers because we sometimes are our own worst enemy as we change. So, one part of our strategy to make this affordable is to control the cost, number one, by being consistent in our stating of the requirement and what we've put in the budget, and then the next piece of this is to control the cost of the things that we buy.

I have put into place several mechanisms in the Navy organization to begin to take a very close look at what things drive the cost of ships. Many times, well-meaning people who are wanting to put the most capability they can all the time in these ships turn out inadvertently adding cost that we probably didn't need to add. We have put a structure in place through the ships' characteristics board that Admiral Edwards is going to chair for me. Then myself as the resources and requirements review board chairman to actually look at these things, understand the cost drivers, and then make sure that we control the growth of requirements in those things and figure out things we can do to produce those ships cheaper. In the case of, for instance, the *Virginia* class submarine, I've invested around $160 million or so in cost reduction-type things to drive the cost out of those ships. Looking at the cost of a DD(X), we have invested money, and I've looked at things we can do to drive the cost out of that ship and deliver at cost targets. So, we've set some very challenging cost targets for ourselves, but we have some really smart and hard-working people and some good models that will now help us to control the cost there.

One thing I might add, on the CBO study, while it does postulate there's a large amount of money, I think it's around $19 billion or so—a lot of that number is driven by some assumptions that were made in the out-years on what we're going to do to recapitalize the SSBN force and recapitalize the DDG force as they reach the end of their service life. In the near-years, we're not that far off. So, our challenge is to control the cost and then do what we can in the near-years or the far-years to keep the cost of those things from growing out of control.

Senator TALENT. It's reasonable to believe that, with a sustained effort, you can hold these costs down. A lot of that is going to be culture change, which is going to have to start at the top. Admiral

Edwards, you're going to have to be committed on the requirements side. I certainly don't want to keep you from going into that, but the $13.5 billion assumes you can do all of those things. If you can't do all those things, the number goes up. Look, I'm not going to ask you to say this program, this program, this program I'm going to take out in order to be able to fund that, but do you have a confidence level that you can get there by fencing off dollars from your current budget? How much would your confidence level grow if we could increase the top line above what you expect, and the Navy could get a piece of that?

Admiral CRENSHAW. Sir, I think two parts to that. Number one, yes, if I get more money on the top line, my confidence would grow in that area. Having a number for us to shoot for, in my opinion, is better than not having a number and let it drift. So I have a number and I have a goal, and part of my financial strategy now, if I know what that is, there are other things that drive my cost in the Navy, and the way that I sort of parse out the budget, in macro terms, is it depends on a couple of things happening in order to have that $13.4 billion average: One is I have to continue to very carefully manage the manpower cost associated with the Navy—one of our most expensive assets, but also our greatest asset. So part of the strategy is to continue to do what we need to do to control the growth in the manpower accounts. Some of that is putting technology in the ships. Some of that is working smarter. Some of that is doing some military-civilian transfers where it makes sense to do so. Some of that is looking very closely at our shore requirements. I can tell you exactly how many ships or how many sailors I need to man a ship at sea. I'm not quite so certain if you ask me about an air station or a naval base exactly, and I'm working on coming at that.

Senator TALENT. Let me interrupt and ask you about that. I was going to ask about Sea Swap anyway. Now that we have been working with it for a few years, is it working? Because critical to holding down your personnel costs, I assume, is you're going to continue Sea Swap—maybe even try and expand it. Digress for a minute and tell the subcommittee, is it working? What are the long-term impacts in terms of wear and tear on the ships? Crew morale? Are there any negatives you see emerging that might impair your ability to continue it to this degree or expand it? Digress for just a minute and cover that.

Admiral CRENSHAW. I think Admiral Edwards, as the surface warfare lead, also will have some very definite comments on this. In our second round of experimentation with Sea Swap, we learned a lot. Sea Swap, although we call it that, is not necessarily a new concept for us. We've done that for a long time in our submarine force and in some of the other forces. In our mine warfare force, we've been doing that for a long time, but we haven't done it on the ships that have large crews, and we're learning a lot, and I think I will keep it at that and let Admiral Edwards answer.

Admiral EDWARDS. Sir, we have an experimentation that's going to happen on the east coast. It's going to continue the Sea Swap experiment and has the metrics embedded in it that we're going to need in order to make some decisions on where to go. Clearly, on the destroyer-class ship type, the DDGs, the FFG, or the LCS, the

smaller combatants, Sea Swap is definitely doable. There are some challenges there, but we can get the crew there. We know what the issues are. On the larger amphibious platforms, for example, the jury is out on that. We will have to be very careful how we proceed on that, and we have not done the experimentation and sea trials we need to do to see all of the ins and outs of being able to make that happen. LCS is a ship that's going to have approximately 75 crewmembers onboard. We are going to swap the crews on that ship, and the first two ships have four crews that have been assigned already. So that is going to be a force multiplier with that particular ship.

Senator TALENT. The crew morale is holding up?

Admiral EDWARDS. Everybody is leery when something new comes in. The crew morale at the end of the day with the experiments we have done was overall good. The material condition of the ships were satisfactory, and the experiments we have done to date would say that the crew swap can be performed on DDGs and DD-type ships.

Senator TALENT. Okay, Sea Swap I think we've pretty much covered. Admiral Clark was pretty good at getting money out of the personnel side, and I don't know how much there is left—how much gold is left in that mine, in that vein for you to get—but going back for just a minute and then finishing your discussion of your confidence level in getting to the $13.5 billion.

Admiral CRENSHAW. We talked about controlling the manpower costs. The other piece that I think is critical is when we talked about controlling the cost of the things we buy and keeping a lid on what exactly we need to buy there and buy what we need, not necessarily what we want. The third piece that I kind of look at and worry about is controlling my operations and maintenance (O&M) costs, making sure we're getting the best value for the dollar there as well because if you look at a display of the major budget categories—the manpower, the O&M costs, the research and development (R&D) costs, and procurement cost, everything is relatively flat and under control. The R&D accounts are going down as we are now shifting that investment from R&D of new things to buying the new things. So there is no money there.

So to the extent that the money is in procurement, it requires me to do those other things. The O&M piece is very important to me as well. Now, some of that I don't have control over. As fuel prices go up, I just have to deal with what happens. But we have done a very good job, I think, over the last couple of years, particularly in the naval aviation enterprise, of beginning to run the business part of the Navy, if you will, the back shop, as an enterprise and looking at the Commander of Naval Air Forces, Admiral Zortman, and Admiral Massenburg is his Air Systems Commander, and Admiral Kilcline, who works for me as his resource guy, and looking at this in terms of a business and how we go about doing the maintenance and how we go about providing things.

The naval aviation enterprise has found some significant savings in the things that they have done. There are several anecdotes about how they have gone from producing at one facility—maybe 5 engines a month with 3 shifts to producing 20 engines a month on a single shift because of putting into place good business prac-

tices. I'm very encouraged with what the aviation enterprise has done. We also are beginning to do the same thing in our surface and our subsurface enterprises. I also think in terms of the Expeditionary Combat Command that we have talked about in this 2007 budget as also being a new emerging enterprise that pushes things and combat capability out the door for us.

So, to sum up, controlling the cost of the things that we want to buy, controlling my manpower costs by a variety of techniques, trying to be innovative and efficient in how I'm doing the business part for the O&M piece of that are all things that will allow me to meet that target. The money is in the budget for me to do that. I just have to keep it from eroding for the things we talked about.

Senator TALENT. I don't know that I would have the same confidence level you do, that you have just described $5 billion worth of additions to SCN. It's a crucial time for the Navy, for all of us to be very direct with each other——

Admiral CRENSHAW. Yes, sir.

Senator TALENT.—and I have concerns along those lines. I hope you're not counting on savings that involve perhaps key policy disputes between the Navy and Congress. In other words, there may be some savings you're looking at where you know that from past experience, that Congress might disagree about the appropriateness of that action. If there's a bank of those you're looking at, I would caution you to be careful—not because we can't be convinced, but just because you can't be certain that we will be convinced. I take what you said before, your confidence level would be substantially increased if we could get the top line up and you could get a piece of it. Is that a fair statement?

Admiral CRENSHAW. Yes, sir.

Senator TALENT. I have 2 minutes left in the vote. Fortunately, Senator Reed has voted already and is willing to take the hearing over and ask his questions while I go vote so I appreciate that.

Senator REED [presiding]. Mr. Chairman, if I run out of questions, I'll just put it in a slight recess for a while. Thank you, gentlemen, for your testimony and your service. Admiral Crenshaw, the QDR talks about repositioning naval forces in the Pacific, and it says consistent with the global shift to trade and transport and essentially calls for six operational and sustainable carriers together with 60 percent of our submarines. Just in terms of sort of strategic concepts, trade and transports usually imply surface activity, aircraft carriers and submarines, stealth air support, the kinetics of the battlefield. Is this justified simply because trade and transportation patterns are changing in the Pacific, or is it something else?

Admiral CRENSHAW. Good question, sir. Number one, we are a maritime nation. Most of the things that we consume around here generally come by sea, and the things we sell go by sea and so, for that reason alone, it's good for us to focus in that area.

It is an emerging powerhouse economically, but one of the things strategically and maybe operationally that sometimes escapes people in the Pacific area and the western area is the tyranny of distance. It's a long way to go anywhere over there. I've been a Mediterranean sailor most of my career. From the time we left port, in about 10 days or so, we were crossing through the Strait of Gibral-

tar. Within 2 weeks, we would be operating in the Mediterranean theater. If you look at the Pacific, it takes me a month from the west coast to get to anyplace where it's important to be, and it takes me another month to get back. So the tyranny of distance here is such that wisely positioning those forces allows them to not only be there to protect the trade and commerce that we have, but it allows them to be positioned with the type of speed we need in case something happens in that neck of the woods. So by having forces over there, we begin to take some of the edge off of the tyranny of distance, if you will.

It is a risk-reduction maneuver on our part because we know we have trouble sailing people from the east coast. It takes a long time to get them over to that theater of operations. So, it is an important area to us. Those areas of the world are less stable right now. So that is another reason why we are moving over in that direction, sir.

Senator REED. One of the concerns that several of my colleagues and I have is with the production rate of submarines. We're building one *Virginia* class submarine per year up to fiscal year 2012, at which time we're scheduled to go to two-a-year production. That has been a threshold that keeps slipping and slipping away it seems. But with this projected build rate, anticipated inactivations of submarines, and scheduled maintenance, the SSN inventory will dip below the minimum 48 to fulfill mission requirements from 2013 to 2035 to as low as 40 submarines. At the time, Navy officials today, I think, would acknowledge that our submarine force of over 50 fast-attack submarines is unable to perform many of the missions. As I go out, and as my colleagues go out and talk to combatant commanders, when you ask them what do they really need, what more do they need of, they say we need more submarine platforms for intelligence, surveillance, and reconnaissance and for many other capabilities. How is the Navy going to deal with the shortfall come 2013 and 2035 if we don't get the two-per-year production quickly?

Admiral CRENSHAW. The submarine numbers are an interesting dynamic, Senator. I had a couple of tours in the Pentagon, and it's been interesting for me to see how we have evolved our thinking on this. When we undertook the 313 plan, the CNO challenged us to take a broad look at all of the things and all of the good work that has been done over the years from all of the people in the Department and outside of the Department and studies like the CBO study. We did so specifically as we looked at the submarine force structure. The number 48 was kind of a sweet spot when you took all of these together for us to meet what we considered to be the minimal acceptable requirement which is about having, on any given day, about 10 submarines out doing things, and the 48 number gives us that.

We looked at the availability of the submarines as we began to build the *Virginia* class and there's an interesting dynamic here. One of the things that's the real strength about this great submarine, is that it is unmatched in the world. It is one of our asymmetric strengths. By the way, sometimes you hear about the enemy having asymmetry. We too, have asymmetry, and our submarine force is one of those. The capability that we have built into that

ship, particularly from the maintainability standpoint, is such that that ship will not be required to be refueled, making it more available than the 688 class was. The 688 class has spent about 40 percent of its time doing various maintenance things and refuelings. The same figure for the *Virginia* class will be 10 percent. So, that alone will mitigate some of that 48 number.

There are also some things that we can do in terms of our concept of operations (CONOPs) on how we actually employ the surge of those submarines and have them available at certain key times when we need them as well as some of the initiatives that we have done in forward basing some of these submarines—once again, getting back to that tyranny of distance thing. So we will drop below but there are some mitigating things we can do in terms of reduced maintenance. We will need to do some CONOPs and managing that force more closely than we normally would. Although we manage it pretty closely, we will have to spend more time on the maintenance cycles and how we do that. So, we will drop below that number. That is true, and we will come back and get to that number.

Senator REED. Again, just to clarify for my own information and the committee's, after a lot of deliberation with a range of numbers, the Navy essentially said well, 48 is the optimal number of submarines, and there's a lot of debate whether it's actually sort of a range. It could be 52, but we will go down in certain periods of 2013 to 2035 to 40 operational submarines, and I'm not that good at mathematics, but that's 8 submarines out of 48 that aren't there. That's a pretty big chunk. That is not one or two, and I think it is raising the risk factor, frankly, and I think we do have to get to two-a-year much faster than we are doing. Another aspect of this argument I would like you to comment upon is that one of the pressures we see is the expense of these individual one-a-year submarines—over $2 billion, but it's hard to get the contractors down to $2 billion if they're only building one a year. Is that something that the Navy is prepared to bring up also, the notion of being able to get the price down by going quicker to a two-a-year build?

Admiral CRENSHAW. I think in the near-term, getting to a two-a-year build will probably not significantly decrease the cost. What will, I think, deliver more cost savings are the investments that I have made in this budget—over, I think, about $170 million or so in reducing the costs of the submarines. There is no doubt that when we get to two a year, there will be some benefits realized from driving the costs down, and that is part of our cost-target calculations as we look at that. So, submarines are interesting. The advance procurement lines have to be laid in to buy the reactor plant, and some of the very specific high-end items—reduction gearing and those kinds of things early on.

In order to do that, we would need significant investments this year to start doing that any earlier. With the CNO, we struggle with this, trying to look at balance with all of the warfare areas we have to deal with. Going to two a year in fiscal year 2012 was a commitment we made. We have to get there. We have to do that. I have put the money in to drive the costs out, and I am continuing to look at any and all ideas I can to reduce the cost of those things.

Senator REED. Let me ask a final question before I turn to the Marine Corps, your colleagues. I know Senator Lieberman and oth-

ers, Senator Dodd and myself, are interested in the follow-on and new design, and I wonder if you could just comment upon where we are on the new design.

Admiral CRENSHAW. I mentioned the asymmetry that we have in areas, and certainly our submarine design capabilities that we have are one of those asymmetric advantages that we in the United States enjoy. In my opinion, they're a national treasure. There is nobody like them, and this is a serious issue we have to deal with. We have a RAND study going on right now that is going to help us work our way through that. I think there are two pieces of this—there is the submarine design part, and then there is the nuclear engineering part. We can mitigate some of the nuclear engineering things by some of the things we're doing with the aircraft carriers, but the submarine design part is something that we have to deal with, and we're working hard at that. I talked to Admiral Munns about that and Admiral Walsh—he was my resource sponsor that does that sort of thing regularly on things that we're looking at working with the industry and working with Congress. But my opinion is they are a national asset we're going to have to figure out how to protect. They're not only important to the Navy, they're important to the Nation, and we're going to have to figure out how to deal with that.

Senator REED. Thank you very much. General Gardner, your marines are doing a fabulous job across the globe, particularly in Iraq and Afghanistan. I've had the occasion to go visit them. What is their readiness status given the fact that they're being exercised very vigorously in this global war on terror and the conflict in Afghanistan and Iraq? Do you have any units that are C–3 or below?

General GARDNER. Can you say that again?

Senator REED. Do you have any units that are C–2, C–3?

General GARDNER. Sir, the units in Iraq are at the highest level of readiness, and we are pulling out all the stops to ensure that that stays the same in terms of our logistic support procedures and satisfying any urgent need requirements that they have. We have taken risks in our homestation forces and in some of our preposition stocks, as you are aware, to maintain that readiness forward, and we are using our supplemental funding request to backfill that bathtub of readiness that has developed, if you will. We call that reset the force. We assessed where we were with how deep was that bathtub. We picked a point in time, October 1, and we felt our estimate was based on about $11.7 billion that we needed to backfill that bathtub of readiness and to recapitalize those assets that have been so heavily used in theater. That's our estimate of where we are, but I would say the readiness of the troops in theater is where it needs to be and is at the highest levels.

Senator REED. Does the supplemental represent a complete filling up of that bathtub, that $11.7 billion?

General GARDNER. The $11.7 billion represents all that we know—our estimate, as of October 1. It is a very detailed estimate which we based on some pretty detailed analysis of about 300 individual table of allowance material numbers, but there are some limitations on how fast we can execute that. Most of those limitations come from the size of the industrial base, but we're confident we could execute that amount of money in about 2 years' time.

With what Congress gave us in the title IX bridge supplemental, what we have requested in the 2006 supplemental that's over here on the Hill now we think we'll have about $5.1 billion towards that $11.7 billion. We will be looking for another $6.6 billion next year. Could I use some of that $6.6 in additional money this year? Yes, we could. We believe that we could spend about another $1.4 billion this year. We could execute that amount, but that's probably the extent of the amount of procurement we could actually execute in 2006.

Senator REED. Thank you, General Gardner. General Mattis, end strength numbers, I know the commandant has spoken about this, and one wrinkle is the creation of the 2,600 marines, the Marine Special Operations Command (MARSOC). My understanding is that essentially the Corps has sort of taken that out of your hide currently because there is not an increase in end strength. Any comment on that and just the overall end strength situation?

General MATTIS. Thank you, Senator. The 2,600 marines we took out, some of the missions went with them. In other words, some of these marines were on amphib ships when they deployed before. They will still be there. Their chain of command shifts slightly so that we have this special operations capability out there for the commander of Special Operations Command. Some of them are additive. We have a review group going on right now looking at which ones we need to restore. For example, do we need to bring some more signals intelligence marines on Active-Duty or enlist more? I think we could move some over with this group, reconnaissance marines, some very highly-skilled marines. We should have a report out on this by June.

The 5,000 end strength that basically the Hill has given us over the last several years, we can't thank you enough for them. They have been great against the enemy. You've resourced us sufficiently to recruit and train and equip them, and we're looking right now at whether we have to keep at that number, which we think we do for the current fight. But can we go down to 175,000 and have a fully capable Marine Corps and still take care of MARSOC and these new things that came up? I think we can give you a very definitive answer by June. Right now, with what you're doing, you're keeping us balanced where we want to be. We probably don't want to go higher than that right now because it would take an extraordinary effort on the part of our recruiters to maintain the high quality standards we're insisting on maintaining for reasons you're fully aware of.

Senator REED. Thank you, sir. Thank you, Mr. Chairman.

Senator TALENT [presiding]. Thank you, Senator. I fully agree with the point you made regarding the submarine fleet, and I would just say that unless we can get to two a year more quickly, I don't think we can maintain 48, and I'm not sure 48 is enough. I see the list of the 313-ship Navy, and I put question marks next to two things—the 48 attack submarines and the 81 surface combatants. Now, depending upon how flexible LCS is, it's not a surface combatant, but maybe it can pick up some of those requirements, but they are certainly not going to be able to use them as submarines. We know that. So, I would concur in Senator Reed's questions on that front.

General Gardner and General Mattis, I am very interested in the distributed operations concept. I'm intrigued by it. I wonder if you would give me an overview of how it's going to affect future force structure requirements as well as Marine doctrine and expeditionary force capabilities. Then, if you would tell me how you're planning to fund it. I know you're funding out in the fiscal year 2006 supplemental, but what are your plans for funding it after we discontinue the supplementals? Just share your thoughts on distributed operations.

General MATTIS. Sir, if I could take the first whack at this as far as the requirement that we see and why we turn to this. As you are aware, back in the 1990s, our former commandant, Krulak, came up with the three block war. There were many of us who doubted that he was right, but we divested ourselves of self propelled artillery. We didn't buy the F–18 E and F and decided to wait for the JSF. There were a number of things going on that were based on a different view of how war was developing. Part of that was could we distribute marines more widely, not just geographically across the battle space, but with skills distributed differently within those ranks that would allow us to move against the enemy using modern communications and joint fires to mitigate the risks that are obvious to all of us.

The experiments have been going on. They have been very encouraging and we just had a test unit that deployed as part of its battalion to Afghanistan, and we had a very stressful situation where a unit came under heavy attack. We were losing people, killed and wounded, and this unit was able to use the skills and the equipment they were given to reverse a very difficult situation. The experiment basically continued when we went into Afghanistan with a data collector observing what was going on.

We have British Royal Marine and Australian noncommissioned officers (NCOs) as a part of this to take advantage of the skills that they brought from various operations overseas. What we're finding is that the combination of very high recruiting standards for the last 20 years and the intense combat operations have given us one of the most capable NCO corps we've ever seen in the Marine Corps' history, and we're known for some pretty strong NCOs.

Right now, distributed operations is going to be an additive capability to allow us to aggregate those marines, distribute them, and bring them back together. The bottom line is using various platforms—MV–22s and Expeditionary Fighting Vehicles—we'll be able to move them in ways that will confront the enemy with some very menacing dilemmas. I think it would be better if I turned over the funding of this capability to General Gardner.

General GARDNER. Sir, I would say there are two aspects to the funding of this concept, and it is a concept, and that is the material aspects. We're pushing capabilities down to a lower level as far as command and control capabilities, weapon systems, and it comes to around $19 million per battalion. We intend to outfit all 35 Active and Reserve battalions. Another point I would like to emphasize is that we're distributing this capability throughout the entire Marine Corps.

The other major expense would be the training aspects. We're putting a great deal of emphasis on training in the Marine Corps, and it is principally successful because of that training.

So both of these costs are being paid for in supplementals as you stated, and we have most of those costs in the 2006 supplemental and what we do not, we have in the 2007 bridge supplemental, which you also have before you. But it's not just the material aspects of what we're actually giving those marines and those units, but it is also the training facilities and the O&M costs necessary to conduct that training. Those costs are also necessary to support this concept.

Senator TALENT. Do you think you can fund it through the supplementals?

General GARDNER. Initially, we would like to get up on the step with the supplementals. We can do that, and then we will need to finance those to conduct that training in the ongoing years the O&M cost out there.

Senator TALENT. It's plausible to me that you could at least take care of the material costs through the supplemental.

General GARDNER. That is our intent.

Senator TALENT. Admiral Crenshaw, let me go back to one more 30,000-foot question with regard to the force structure plans in the 313-ship Navy. The report describes that as meeting the needs of the national military strategy with an acceptable risk while pointing out there are capability gaps. What are the capability gaps? What impact do you think they are going to have and discuss a little bit how you draw the line between acceptable and unacceptable levels of risk.

Admiral CRENSHAW. If I could tackle the risk piece first, risk is an interesting discussion. We think about that in a couple of dimensions. The first thing is that when we begin to talk about risk, we begin to lay out sort of a matrix, if you will, of sort of a three-dimensional kind of cube. Put simply, the first thing we do is, we think about the possibility of something happening. Then we say if that were to happen, what would be the consequences. Then we look at it in a time dimension too. It may not happen now, but it's going to happen in 2020.

As we look at things, we try to figure out and make some judgments on, obviously, if this is something that's not going to happen very much, and even if it didn't have a big impact on us, we wouldn't look at that too much. That would sort of be the last thing we would look at funding. We're also very concerned about the things that may not happen very much but could have some very catastrophic effects if they did happen. So we have to hedge against that, and we have to look at making sure that we have accepted only the risk necessary so that if that were to happen, the catastrophic event is mitigated, and it doesn't happen. There is a middle ground of things that can happen and have various levels of effect.

That said, we kind of look at a matrix like that and then try to think about what are things that are just absolutely redline things that we can't do without, and we've talked about some of those things. One is in the capability area of being able to deliver a certain amount of presence, looking across the spectrum of how many

carriers need to be present at any given time and how many submarines need to be present at any given time. Then, there is this area where it doesn't happen very much, and even if it did, there is not a big impact. There isn't a lot of risk there. The big category in the center is sort of that measured risk/acceptable risk category. As we began to stack those up, we looked at things that are uniquely naval, and those are things that only we can bring to the fight, and that's a category where we cannot afford to take much risk in those missions—undersea warfare being an example, if that's ours to do.

So, I don't want to take much risk in that area because nobody is going to do it but me. Then we begin to look at what other capabilities are in the joint force where we may be able to get some help from our joint partners. Those are areas where then we work jointly with the other Services to figure out if there are some risks we take in the Navy, depending on some of our joint partners. One of those is in the area of some of our tactical air forces where we're not the only Service that delivers that. That's an area that we can explore in coordination with the other Services to make sure that if we're going to take some risks there, we have coordinated with the other guys to make sure that they're not. So, it's kind of a complementary affair there.

So, I would say those are some of the areas where you might be able to find some of those gaps or those areas where there is overlap and things that our joint partners do. There may be things in the future that we might have to rely on our joint partners to provide so that we would divest ourselves totally of something. There are other areas where we are complementary to them, and we would sort of back away and do that.

Senator TALENT. That's a very logical assessment matrix, and what I was thinking of when you were going through it was applying that matrix to seabasing. I said this to Admiral Clark when he came up with this; is the risk of not having the seabasing capabilities worth the cost given the risk as you have defined it? Because you have to make certain assumptions about our inability to go through certain countries. Other Services can do some of the power projection you want to do through seabasing. It's an area where you can anticipate concerns and maybe use diplomacy, and I have been skeptical. As supportive as you all know I am of naval spending and shipbuilding, I have wondered whether, in the context of this budget environment, this isn't a risk that we should take, not having this capability and then trying to prevent a situation where we can't go through a country or using some of the other Services. I have an ongoing concern about whether this is something we ought to be funding.

Admiral CRENSHAW. Seabasing, in my opinion, is one of those asymmetric advantages that we enjoy. Nobody can do it like us. I think in this uncertain world, as we look forward, our ability to get access when and where we want it may not be as assured as we've had in the past. General Mattis was certainly the beneficiary of that asymmetric capability, of being able to provide a seabase from which we didn't have to put a footprint ashore. Sometimes, for various reasons, our friends may not want us to be ashore, and sometimes it's difficult for us just because they don't mind us being

there, but they don't want a large footprint ashore. So, I think seabasing is one of those asymmetric capabilities that is worth the investment here because it's something that only we do. It's in that category of nobody else can do it but us. Seabasing is not new to us. We've been doing seabasing since John Paul Jones was sailing around. But sometimes people tend to confuse the term seabase with the concept of seabasing.

So, I would offer up that I think it's a very important capability. It's an evolutionary, not a revolutionary capability. Those are not my words, those are General Mattis's words. He was much smarter than I am to come up with that, but it's about not having to put that whole iron mountain of things ashore because when we do that, number one, we have to get it there, then we have to protect it and it becomes a liability to us. Our seabasing vision is that we're able to not have to rely on permission or political considerations that we can go where we want and project that power. We can first assemble our forces at sea with the right equipment without having to go through and get people's permission. We can then project those forces ashore to do things.

I will admit we have not been as articulate as we could in talking about seabasing from a joint area because it's not only Navy and Marines. Those soldiers and airmen that are ashore eat the same beans and shoot the same bullets, and those things can come from the seabase without having to have a fully-developed port infrastructure to support it and without having to have anybody's permission. So, this is a tremendous capability for us.

Now, one of the things we tried to do in thinking about seabasing is realize that when we come up with something, it can't be something that we just don't use. It has to be something that is out and about and engaged in the global war on terror and doing the missions in those phase-shaping things. Many of the seabasing elements we have designed are doing just that, taking advantage of successful designs that we already know about that are already in production and being able to take some of the concepts and do some evaluation of being able to selectively offload things instead of just having to unload everything at once.

Now, in our concept, we can now select what we need, pick and choose, go to the supermarket and then send ashore those elements of support and power we need. So I think it is a great asymmetric advantage that only we can do, and we have proven—in just the last few years, we've done it many times. I would maybe ask General Mattis to comment.

Senator TALENT. General, comment from a marine perspective. How substantially does this reduce risk for you? How enthusiastic are you about it?

General MATTIS. Sir, we're very enthusiastic. Mr. Chairman, although your question is very valid, and we have looked at this amongst the officers at the table to make certain this is going to really deliver something we need, not something we would like to have in a less fiscally-constrained time, the point I would make is it's an increasingly anti-access world. As best I can determine from open sources, this city offered $28 billion of loans and grants to Turkey for a one-time passage of one U.S. infantry division, and Turkey, that stood by us in Korea, lost billions, and the sanctions

against Saddam, said no. I think what we are seeing is that all politics are local, not just in Chicago.

When we went, the admiral in 5th Fleet asked me to go into Afghanistan, I will tell you that had I not had the seabase, the amphib ships, those beautiful Navy greyhulls, we would never have opened a naval ground campaign of conventional forces in southern Afghanistan. When I went into Islamabad, it was still early after September 11. They didn't know if we were going to stay the course, and they were eager to hide what we were doing. Every night when it got dark, the ships would come in against the coast. We would land the marines across the coast. We would have Marine KC–130s, Air Force C–17s pick them up and fly them in. This is after the assault troops took Rhino, the operating base there.

President Musharraf was betting his political life we were going to be victors. At one point, he brought newsmen down to the beach and said, "I told you we're not supporting the Americans." If they would look closely, they might have seen the waves washing the tracks off the beach. That is all they would have seen. I think that when you look at the cost of this, it's a lot less than the $28 billion we offered Turkey. It gives us the use of the sea where the Navy is sovereign and nobody can take on the U.S. Navy there. But it does not put the second order and third order negative effects of a large U.S. footprint ashore in a country that may even be our friend but cannot absorb, for local political reasons, some of the negative aspects that come with a heavy U.S. footprint. I think we're enthusiastic about seabasing. Now, what the seabase looks like, we can work on that, sir.

Senator TALENT. On that point, Admiral Edwards, are you concerned about whether we have the surface combatant capability to protect the seabase given the change, which I think I agree with, going to ships that are going to be more vulnerable because they are just less capable? It does seem to me, though, that that is going to draw away a lot of your surface combatant capabilities.

Admiral EDWARDS. Absolutely. We have to commit what we would call the sea defense portion of the Seapower 21 in order to protect the seabase, and that's in the dimension of anti-air, which includes ballistic missiles, mine warfare, and surface warfare to protect these. But we do that. We do that today with the expeditionary strike groups and the other amphibious shipping.

Senator TALENT. All right. Now, you were in the middle, and I keep making you digress, but that's because your answers are so interesting, Admiral Crenshaw. You talked about risk, and I also asked you about capability gaps in the future force structure plan.

Admiral CRENSHAW. I think the risk, Senator, is in terms of capacity. We have a lot of platforms that deliver a lot of capability. The question is, do we have the right capacity for this, have we anticipated the right stuff? We have the right capabilities. As we begin to do the capabilities-based approach, we begin to realize that capacity is very important, just like capability.

So I would say we talked about the capacity in the 48 submarines. If we had more, there would be less risk there. So if we had more of that type of capacity, then that would retire some of that risk. As you said, there's a range, and there's a judgment that we have to make here. Of course, working with you and others,

hopefully we'll make our case that we have accepted the right amount of risk across the board where it was prudent to do so, retired risk in certain areas, for instance, in the riverine area, where we used to do riverine in Vietnam, and we used to have Navy patrol boats going up in the rivers. As we looked at the monolithic Soviet Union, that was not necessarily a capability that was one that we needed right away. We elected to take some risk in that area. Actually, the Marine Corps sort of took over that mission for us. Now we have realized, as we look at the shaping of our partner nations, as we look at the types of threats we're facing in a global war on terror and in the long war, this is now a place where we need to reduce risk, and we need to make some investment.

Senator TALENT. How important is it for you to fund the riverine squadrons through the 2006 supplemental?

Admiral CRENSHAW. The money that is in the supplemental, that's requesting the money that we need to outfit the first of three squadrons we're going to have in our CONOPs. The first thing that this first riverine squadron is going to do next year is to relieve the Marine Corps guarding the Haditha Dam area. The marines have been doing that, and they have been doing it with their riverine forces. So the money that we have requested in the supplemental does several things. It allows us to outfit that first group that needs to start training very soon. It allows us to give them the basic equipment they need. It allows us to get the training done. We're going to use the Marine Corps facilities at Lejeune and their small boat and riverine capability to actually train those forces up. Then they will fall in on the boats that are over there right now with the marines. Now, that squadron will be over there for a period of time, and we'll rotate them out.

We also have money in the supplemental to request boats so that when the second squadron begins, the first rotation comes out. Those boats will have been over there a long time. Some of them have been ridden hard and put away wet. Some of them have been shot. So we're going to need to replace and refurbish those, and have equipment back in the States for that second group to be able to go over to and fall in on. Then there is the third one. So, it's very important to us in the near term to be able to relieve the stress on the marines and take over that mission, and this is our first step in getting back in there. We can't do it all at once, but we're going to take this first step, get back in the business and then ramp up from there. The supplemental is important for us to get back in the business, and I appreciate your support on that.

Admiral EDWARDS. Sir, if you look at the lead time for some of the equipment that we're going to need to go over there, and you back that up to when it will be available, the lead time on some of these boats is 12 months. The lead time for the training and equipment part is about 9 months before we're trained and equipped and get ready to go. So, there is a lag time which kind of puts it right into the window of this supplemental.

Senator TALENT. We're strongly supportive of the riverine concept, and I agree with you. I think you need that money in the supplemental. It'd be a significant impact if you had to delay that to the regular 2007 budget.

General Mattis and General Gardner, let's talk about H–1 for a second. Now, we're covering a lot of ground. I only have a couple more. I've been meandering back and forth between my questions, and I appreciate your responsiveness. It's my understanding that the third low-rate initial production (LRIP) you want on H–1 is expected to coincide with the start of operational evaluation, which is approximately—well, I guess next month. We know that the program has been over budget and behind schedule with regard to the first two LRIP lots.

Given the fact that we have cost issues and that H–1 delivery is behind schedule, why do you think you need to move forward with the third contract at this time? I'm not saying that it is not an important program. I'm not saying the problems aren't going to be solved, but I just wonder, if we're behind schedule on the first two lots, why you want to move ahead with the third LRIP contract now.

General GARDNER. Sir, the Marine Corps has no hot production lines for its aircraft primarily the CH–46. With the full production decision on the V–22, we now have a hot production line for that one particular aircraft, but the LRIP production that you're talking about for the H–1s is the only potential that we have to replace the 17 H–1 aircraft we have lost since September 11.

The aircraft that are over operating in theater are operating, in the case of the UH–1, at a margin. When you are operating in the high-altitude areas, for example, in the Operation Enduring Freedom as they were, it's the high altitude, the dust conditions, it is marginal to operate there. The Assistant Secretary of the Navy for Research, Development, and Acquisition, Dr. Etter, is conducting a study, which is due to report out next week, to assess the program and where it is with the necessary restructuring. But we stand firm behind our requirements to replace these aircraft we have lost in the war, and we need the capability that those aircraft bring to the fight, the light utility and the light attack. We look to the acquisition community to provide those. We have been looking for these replacement aircraft for over 3 years now.

Senator TALENT. I understand your commitment to the program, and I've certainly lived with and worked in programs that have had problems. That happens once in a while, but I'm not sure why we need to move ahead with a third when we are behind on the first two. Take a minute and update us on I guess what I will call the mishap with the MV–22. I know that you haven't had time for a full investigation, but tell us where you're at, if you would, and if you're drawing any preliminary conclusions. We do want to stay in touch with what happened there.

General GARDNER. Sir, that incident took place just 2 days ago, as you're aware. It was a post-maintenance functional check evolution. It was a VMMT204, which is our training squadron down in New River. There was some sort of engine malfunction, and the result was severe damage to the wing and the engine nacelle. It is under investigation.

Of course, the investigation is focused on the maintenance activities that took place that led to the requirement to do the functional check as well as the actions of the crew, which we always do in this case, and we'll keep the committee informed.

Senator TALENT. Okay. I know it's early, I just wanted to bring that one up for the record. Let me go back to you, Admiral Crenshaw, and also Admiral Edwards, if you want to comment on this. One of the assumptions behind the 313-ship number is that you'll be able to extend the life of surface combatant ships to 35 years.

Now, you said before, for example, that you're hopeful of getting some money out of O&M accounts by reforming the way you do that, hopeful of getting some more out of Sea Swap. But it seems to me if you're going to try to extend service life to 35 years and also, with regard to Sea Swap, there is additional wear and tear on the ships, that those are pressures to increase the O&M budget.

So maybe you could tell me what your plans are for modernization and sustainment, let's say, for the Aegis destroyer because I think the first flight of that is going to reach its mid-life within the Future Years Defense Program (FYDP). How are you going to get to the 35 years. It would be great if we could, and I know we stretch a point again at 30, but I think historically, you would rather retire them after 20 or 25 years. So, this is a major leap and a major assumption, and maybe you could fill me in on what your plans are for getting there.

Admiral CRENSHAW. Yes, sir. This is really in Mark's category, but one thing that I think is important to know is we have employed some new concepts on how we're doing maintenance. Many times, the way we used to do maintenance was take everything apart and put it back together again, regardless of whether it was broken. So, we have been doing some more things on condition-based maintenance to make sure we're fixing the right things and having the dollars go to the things that it needs to fix. The other piece of this is to get to that service life, we need to make sure that we do have a robust investment in our modernization program for our cruisers and our DDG fleet. We're blessed to have a great DDG fleet. But one of these days, it will begin to age too, just like us. We want to make sure we have done the right preventive maintenance on it, but we have also gone in for a checkup. I just had Lasik surgery to get myself back up to speed here, and that's really what we need to do to our service combatants.

Senator TALENT. Did you do both eyes?

Admiral CRENSHAW. Yes, sir. So far, I'm doing pretty good. I'm in my reading mode here, but that type of investment and the investments that we put in the hull systems of that ship and the investments that we put into the maintenance—a classic example is moving from a steam-driven evaporator to a reverse-osmosis evaporator. Going to an all-electric ship and taking steam off of those ships are all important things that allow us to get to that service life. So, I think I'll let Mark comment on that.

Admiral EDWARDS. Yes, sir, very quickly. We have a modernization program for the Aegis cruisers and for the Aegis destroyers. There are two things that enter into that. One is the hull, mechanical, and electrical work that you have to do to get the ships' estimated service life out to 35 years, which it is engineered to do as long as you do some of those upgrades. But the reason that we have taken ships out early historically is because of the combat

systems upgrades that we have not done. So, we didn't pace the threat.

So, the ships became obsolete and then the expense of it at the same time to maintain. We have a program for both those ships. 2006 is the initial funding for cruisers and we start the actual cruiser modernization in 2007. Those that are there are fully-funded right now. Then we have funded the hull, mechanical, and electrical portion of the DDGs. Then we think that we're looking at the fiscal year 2012 time frame to bring in the combat systems, which is right about the time that we need to pace the threat. So, this program won't happen overnight. It will be extended over a number of years, but it will be consistent with pacing the threat that we see and that the DDGs and the cruisers were built to take on.

Admiral CRENSHAW. If I could just add something, sir. Not only in the modernization, but in the things we buy, looking at the life-cycle cost of things is very important to us. As we have looked at ways to take people out of ships, we have also benefitted greatly from the technologies that we need to eliminate. For instance, having to go inside of a tank and chip paint because it's beginning to get rusty. We have invested some money in the R&D of those tanks so that once we buy those tanks and they are coated with an advanced coating, we don't ever have to go in there again.

If you look at the LPD–17, although it may be an expensive investment upfront, some of the titanium piping we're putting in there, that piping will be there. In fact, I think we'll probably have the ship gone, and we'll take the pipes out and put it in another one, if we're lucky.

So investments and also looking at life-cycle cost of things is going to be very important to us. One of the benefits of looking at how to reduce manpower is that we have come across some of these technologies as well. So, it's kind of a double bang for the buck there.

Senator TALENT. The picture all of this is building to me is of a Navy that has innovatively looked at ways to make dollars go further, and I congratulate you on that. It has made certain assumptions, which are aggressive assumptions. To the extent that you're betting on the ability of your people to do things, that's a pretty good bet. I agree with you on that. Would you agree that it does show the absolute necessity at minimum of getting to that average $13.5 billion figure over this program?

Admiral CRENSHAW. Absolutely.

Senator TALENT. If we don't have that stable, you can't make these modernization investments, and this whole chain of reasoning then begins to collapse.

Admiral CRENSHAW. Yes, sir, we have to do that. As you mentioned, we're not there yet. We're building up to that, and we will get there. Part of being an average is that some years, we'll have to be above that. We have to smartly regulate, for instance, the procurement of airplanes and make sure we're synchronized here. Right now, we're a little out of synch in that we're having to procure ships at the same time we're having to procure airplanes, and we're working as a part of this aircraft study to try to de-synch them, if you will, and spread the investment out.

So, you're absolutely right. It's important to us. To the extent that we make these cost caps, that money is there. When we don't make one of those, then we're going to have to make some serious trades about what capability we can now afford, and whether this means that the number is going to suffer. So, you are right, sir, but I think we want to be aggressive on this and get it right.

Senator TALENT. We want to get it right. Even if we can do better than $13.5 billion, we still want to get all of this right. The culture is very important, but it certainly would reduce that margin of risk in terms of your ability to do all these things if you had a little margin of error in terms of the top line on the SCN account. That's a fair statement. If we could get that above $13.5 billion so that everything didn't have to happen the way you are hoping it's going to happen, that would certainly be good, wouldn't it?

Admiral CRENSHAW. Yes, sir. But, it's a balance here because I still have to worry about the aircraft procurement, Navy accounts and the other procurement accounts as well as these other ones, so you're right. To the extent that one takes pressure off of the others, it increases my chances of success.

Senator TALENT. I'm talking about a top-line increase, which we were able to do in the budget resolution anyway. Now, we have to work through the appropriations process. This is what I say to my colleagues, if we add a little extra money on the top line, and it turns out we didn't need to, the downside is we spent a little extra money that it turned out we didn't need to spend. If we don't spend the money, and it turns out we did need to in terms of your risks, the matrix and the balloon goes up someplace when we're not as ready as we would have liked to be, that downside is very big.

I think Senator Reed and I were able to get an amendment that increased the top line, and a number of us are working to just advocate on the basis of that kind of logic with Congress rather than make you all just get this exactly on the head of the pin where you're trying to land it.

Let me ask—and I'm about done. I think one more, but Senator Kennedy's concern about uparmored Humvees is well-known in this committee, and he has been an advocate for it. It looks like he is not going to be able to come back, and we'll certainly submit his questions for the record. He asked that.

But let me ask you about uparmored Humvees in the Marines, General Gardner and General Mattis, if you want to comment. This is the Senator's question. I understand the Marines are replacing all the Humvees in Iraq, Afghanistan, and the Horn of Africa, which are equipped with a Level II Marine Armor Kit, add-on armor, and with factory-produced Level I uparmored Humvees. Are all of those uparmored Humvees funded? Are you concerned it will take until November of this year to complete those replacements, and is there any way to speed up that production schedule?

General MATTIS. Mr. Chairman, they're all funded completely, all the way through. We should be complete in July of this year by summer. Right now, basically we have probably 90 percent of the troops going outside the wire already in them. We are still using the Marine Armor Kits on many of them. But I think right now, you're going to see an entirely M1114 uparmored Humvee fleet in both Afghanistan and Iraq by midsummer. So we're in good shape

on that. We do want to buy a few more for sustainment. We know some are going to get knocked out and that sort of thing. So, we have more of them being ordered. I think that probably by November we will have the sustainment vehicles also in our inventory, but that is where we stand right now.

General GARDNER. Yes, sir, and we have worked this out with the Army as far as their production capacity industry to share these assets because they have an equal need.

Senator TALENT. Now, just one additional point on that. I understand there is an additional $596.8 million requirement for armored Humvees in addition to those required in Central Command and, including the amount funded or requested in the 2006 supplemental, there is still a $136.7 million unfunded requirement. Is that your understanding? How are you planning to address that unfunded requirement, and what do you think the impact will be if that funding isn't forthcoming in fiscal year 2006 in the supplementals?

General GARDNER. Sir, our approved acquisition objective is approximately 20,000 Humvees, and we had a longstanding Humvee program to achieve that objective. We have been able to accelerate our Humvee procurement through the supplementals—once you take out the attrition, of course. But all the uparmored requirements in theater already are funded through the supplementals we have already received. Additional money that we have requested is to fill out that acquisition objective.

Of course, we want to get the same kind of vehicles back home for the troops to train in and to operate when they go into theater.

Then also, the vehicles that we have bought that we have put forward in our plan reset the force requirements because we are using these vehicles at such a high rate that we need to go ahead and buy them in advance. A vehicle that we normally plan on lasting something on the order of 14 years is averaging about 4. So, as we buy them now and you get the lead time, that will be about the time to replace those that are out there. So, we definitely need to fund all of these vehicles.

Senator TALENT. We all have to understand that we all want the armor on the Humvees, but it's not going to help increase the life cycle of the vehicle with that extra armor on it. So, we have to be prepared to step up and replace them as needed.

There are a few other areas I haven't touched on, but I had planned the hearing until 5:30 p.m., and I know you gentlemen are busy. I appreciate your time very much. I will submit a few additional questions for the record, and I know Senator Kennedy has many others.

Thank you for being here. The hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JAMES M. TALENT

MARINE CORPS LIFT REQUIREMENTS

1. Senator TALENT. Admiral Crenshaw and General Mattis, the most current Navy/Marine Corps lift study dates to the mid-1990s, and defines a forcible entry requirement to support three Marine Expeditionary Brigades (MEBs)—later reduced to two and a half brigades under fiscal constraints. The Navy's program for the past decade has called for 36 amphibious ships organized into 12 Amphibious Ready Groups/Expeditionary Strike Groups (ESGs) with sufficient warfighting capability to

conduct forcible entry to provide this lift. Today's plan reduces the force to 31 amphibious ships and 9 expeditionary groups. Meanwhile, significant changes have occurred to the ships, assault craft, force structure, and operating concepts since the last definitive lift study. What is the official Navy/Marine Corps lift requirement, and how does the Navy's future force structure plan meet that requirement?

Admiral CRENSHAW. While the last lift document signed by the Secretary of the Navy dates back to the mid-1990s, lift requirements have been analyzed continuously, evaluating total lift requirements for the expeditionary force in forcible entry, as well as lesser missions accomplished by forward presence forces. The maximum requirement for forcible entry is 2.0 MEBs. The Marine Corps has stated the ship configuration to lift 1.0 MEB is 5 LHD/LHAs, 5 LPDs, and 5 LSDs for a total of 15 ships. The current shipbuilding plan will maintain the 27 ships which meet the 9 ESGs needed for forward presence capability with 4 ships for additional capacity for global war on terror missions and warfighting forcible entry lift. Maritime Prepositioning Force (Future) (MPF(F)) ships begin delivery in 2012 and the squadron achieves full operational capability by 2018. As the MPF(F) achieves full operational capability to lift 1.0 MEB, the amphibious ships will stabilize at an inventory of 31 total ships capable of almost 2.0 MEB forcible entry. Thus, the current amphibious plus MPF(F) shipbuilding plan meets the requirements for forward presence amphibious ships in ESGs and well above 2.0 MEBs of total forcible entry lift for major contingencies.

General MATTIS. In order to support joint forcible entry operations (JFEO), the Marine Corps shipbuilding requirement is two amphibious MEB assault echelons (AE) plus two MPF(F) MEBs.

- 30 operationally available amphibious ships, of which 10 must be operationally available big-deck aviation-capable ships to support the aviation assets of two MEB AE.
    - Note: operationally available—minimum amount of ships required to conduct the mission. Availability factors will account for ship maintenance cycles.
    - Minimum of 10 LPD–17s within the LPD program to mitigate risk incurred by limiting each MEB AE to 15 amphibious ships.
        - Both discrete and volumetric analyses have been conducted to load the "2015 MEB AE" on amphibious ships. 17 ships (5 LHD, 5 LPD–17, 5 LSD–41, 5 LSD–49) are required; however, the Marine Corps has accepted risk with a 7-percent reduction in MEB equipment by self limiting to 15 ships per MEB AE.
    - 2 MPF(F) MEB squadrons or one MPF(F) squadron plus two legacy Maritime Preposition Ship squadrons.
    - MPF(F) squadron will consist of 14 ships with two types using proven amphibious hull designs: 1 LHD, 2 LHA(R), 3 T–AKE, 3 large, medium speed roll-on/roll-off (LMSR), 3 Mobile Landing Platform ships, and 2 legacy "densepack" maritime prepositioning ships.
    - We are not ready to commit MPF(F) to forcible entry in the assault echelon without Sea Shield without further experimentation in the following areas:
        - Civilians (Merchant Mariners) crewing MPF(F) and associated legal implications.
        - Survivability, preposition loading, and continued on-load/off-load experiments, etc.
- Naval Surface Fire Support (NSFS) that meets the Marine Corps requirement of "24/7," all weather, long range naval surface fires in support of amphibious operations from the sea with continuous striking power and volume of fires out to a range of 63 nautical miles (Threshold) to 110 nautical miles (Objective) from ships at sea.

Background information in regards to amphibious warships

Our amphibious warships requirement is derived from a capabilities based assessment. Based on the Strategic Planning Guidance and the National Defense Strategy, the current force-sizing construct requires the capability to respond to two swiftly defeat the efforts (SDTE)—each of which requiring a MEB size force. One of these crises may become a decisively defeat campaign, bringing our most powerful force, the Marine Expeditionary Force (MEF), to bear, for highly capable, lethal, mobile and sustained operations. Both discrete and volumetric analyses have been conducted to load the "2015 MEB AE" on amphibious ships. 17 amphibious warships (5 LHD, 5 LPD–17, 5 LSD–41, and 2 LSD–49) are required. To keep demand on

the Navy to an absolute minimum, we have self-limited each MEB AE to 15 ships, accepting a 7-percent loss in MEB equipment. The 7 percent loss in MEB equipment will be transported via assault follow-on echelon shipping.

In support of our joint forcible entry operations requirements, we assess the Navy's 30 year shipbuilding plan (for amphibious warships) as moderate risk trending toward high due to the LPD–17 *San Antonio* class ship production ending at nine ships, and also concerns regarding the historical ability to generate operationally available ships. We have grave/significant concern with meeting our joint forcible entry requirements with fewer than 10 LPD–17 *San Antonio* class ships. With the 10th LPD–17 as one of the 30 operationally available amphibious warships, the moderate risk will trend towards low in our Navy's ability to carry, launch, and land marines on hostile shores. Vehicle stowage, well deck, and aviation support capabilities provided by the LPD–17 are critical to joint forcible entry operations and providing the required lift for the 2015 MEB. In addition, the LPD–17s are great platforms to support the global war on terrorism. Regarding ship operational availability, we note that OPNAV Notice 4700 (Representative Intervals, Durations, Maintenance Cycles, and Repair Man-days for DEPOT Level Maintenance Availabilities for USN Ships) dated 13 June 2005, reflects that 10–15 percent of ships (by class) are operationally unavailable at any time due to scheduled maintenance. Therefore, while OPNAV Notice 4700 would suggest that 34 amphibious warships are required to maintain 30 operationally available amphibious warships, we take seriously the Chief of Naval Operations (CNO) commitment to provide the requisite 30 amphibious warships to embark sufficient combat power.

2. Senator TALENT. Admiral Crenshaw and General Mattis, what is the Department's plan to conduct an updated lift study and define forcible entry requirements for the expeditionary force?

Admiral CRENSHAW. The Department of the Navy (DON) Lift II study was updated in 2002 from a threat-based requirements study to a capabilities-based study that includes future program (Landing Craft Air Cushion (LCAC) service life extension program (SLEP), MV–22, Joint Strike Fighter (JSF)) for MEB AE lift. The Department currently has no plan to further update the DON Lift Study. As we assess current and projected operational requirements for AE lift, Navy believes that the requirements, as stated pursuant to the DON Lift II report update, have not changed.

General MATTIS. Building upon the DON Lift II study, the Navy and Marine Corps are jointly conducting a seabasing capabilities study to:

1. Inform U.S. Navy (USN) and U.S. Marine Corps (USMC) force structure and force posture requirements for seabasing based upon Program Objective Memorandum (POM) 08 force structure decisions, and identify necessary supporting requirements through the 2024 timeframe.
2. Inform USMC and USN POM decisions on force development and investment regarding seabasing well beyond the Future Years Defense Program (up through the 2024 timeframe).
3. Integrate joint capabilities and requirements, where applicable, identified in the seabasing joint integrating concept (JIC) capabilities-based assessment process.

This study will be conducted within the context of OA–06, the seabasing JIC, and other related studies/concepts, and will be based initially on a designated force structure and posture for amphibious and prepositioning ships through 2024. After analysis of the baseline force structure and posture, the study will explore alternative force postures, concepts of operations (CONOPs), and other possible solutions to address the gaps or excesses, within the constraints of the baseline force structure.

Based on the Strategic Planning Guidance and the National Defense Strategy, the current force-sizing construct requires the capability to respond to two SDTE; each of which requires a MEB size force. One of these crises may become a decisively defeat campaign, bringing our most powerful force, the MEF, to bear, for highly capable, lethal, mobile, and sustained operations.

Using the above as the requirement, the seabasing capabilities study will generate the shipping mix required.

SEABASING

3. Senator TALENT. Admiral Crenshaw and General Mattis, the seabase has long been an element of the Navy's SeaPower 21 vision, but new capabilities associated with seabasing have lacked sufficient definition to gain traction in the budget. In

the course of the past year, the concepts for the MPF(F) ships that contribute to the seabase have changed significantly, emerging in this Future Years Defense Plan (FYDP) as a centerpiece of the future force.

Previous concerns have been raised regarding vulnerabilities of the seabase. Crewing concepts (military or civilian), stand-off distances from hostile shores, warfighting capabilities of the seabase ships, and the makeup of escorting ships are all factors in the calculus for ensuring protection of the large force of marines and their equipment deploying from the seabase. Will you please provide the current concept of operations for the seabase, the current concepts for the unique capabilities of the seabase, and how these capabilities will be employed and safeguarded in a hostile environment?

Admiral CRENSHAW. When a regional combatant commander needs seabased forces, naval presence forces are gathered to provide early response and battle-space shaping. Forward deployed carrier strike groups (CSGs) and expeditionary strike groups (ESGs) provide early sea strike and sea shield capabilities to establish maritime domain security. Joint and coalition forces, working with naval strike forces, begin shaping the land battlespace and attrite hostile defensive forces and eliminate air, cruise missile, and surface craft threats to the seabase. Sea shield forces gather to eliminate the mine and submarine threats to the seabase. In parallel, additional sea strike and sea shield forces surge to the operational area to increase capabilities. Forces flow to prepositioned assets to activate additional seabase platforms like the MPF(F).

Once the joint shaping is completed and maritime domain superiority is established, Marine and Army forces can conduct joint forcible entry operations (JFEO) through the seabase to establish a land lodgement and complete decisive land actions. Seabase ships, protected by naval and joint assets, establish and maintain continuing logistics support for forces both ashore and in the seabase.

The seabase is an operational collection of capabilities, including those in CSGs, ESGs, MPF(F) squadrons, Army prepositioned ships, and logistic support ships. The capabilities of CSGs and ESGs exist today and are well understood. The new seabase concept is significantly enhanced by the assault and sustainment capabilities inherent in the MPF(F) ships, and the logistic throughput capabilities of next generation connector platforms like the Joint High Speed Vessels.

MPF(F), along with strategic airlift, allow significant forces to rapidly close the seabase operational area and complete arrival and assembly operations afloat. Assault forces are quickly readied for operations, due to the selective offload capability of MPF(F) ships, and initial air and surface assault waves are prepared for landing and subsequent operations ashore. The design of the MPF(F) squadron allows initial surface assault waves to be accommodated on three of the 14 seabase ships (the 3 Mobile Landing Platforms (MLPs)) reducing the size of the force protection requirements for MPF(F) ships in the inner sea operations area. Remaining seabase ships remain in a more secure, but still defended outer sea echelon area.

Once the initial landings are complete and operations ashore commence, the logistics storage and throughput capabilities of the MPF(F) squadron allow a continuous logistics supply chain to be maintained from theater sources to and through the seabase to all joint forces afloat and ashore.

The inherent sea shield capabilities resident with the ESG and CSG forces provide an initial force protection capability. Joint and coalition forces join with naval strike assets to degrade the hostile force capabilities, and attrite threats to the seabase. Additional sea shield and sea strike forces surge to the area of operations to augment the early arriving forces and establish air and sea superiority necessary to allow penetration of forcible entry forces, including MEBs and Army combat brigades.

The new naval sea shield platforms, including Littoral Combat Ships (LCS) with anti-surface warfare, anti-submarine warfare (ASW), and mine warfare capabilities; along with current and planned cruiser-destroyer and submarine force capabilities in anti-air warfare and ASW are sufficient to reduce or eliminate the threats to less robust seabase ships that arrive to enable the new seabasing capabilities.

The MPF(F) squadron is composed of six different types of seabased ships. By design, many of these ships do not need to approach the hostile shore, but can remain in a protected outer sea echelon area to accomplish their mission. Navy analysis of overall sea shield capabilities indicates protection for the four to six MPF(F) ships that may need to close to an inner sea operations area overmatches any residual threat after the battlespace preparations are completed.

General MATTIS. The current concept for seabasing is resident in the 2005 Seabasing Joint Intergrating Concept (JIC) version 1.0. Additional detailed seabasing concepts of operations covering major combat operations, counter-insurgency operations, and humanitarian assistance/disaster relief operations are

available in the classified annex to the seabasing HC. Seabasing offers the Joint Force Commander with a national capability of at sea arrival and assembly, selective offload of tailored capabilities, seabased sustainment of the Marine Air Ground Task Force (MAGTF) ashore, and the reconstitution and deployment of the MAGTF for follow-on missions. The seabase will provide significant operational advantages in high threat, austere, anti-access environments and offer the Joint Force Commander the greatest flexibility in conducting the full range of military operations.

From the onset of a crisis through the completion of stabilization operations, seabasing offers commanders additional options to close, assemble, employ, and sustain joint forces. Seabasing provides the flexibility to rapidly and effectively build and integrate joint capabilities with minimal or no access to nearby land bases. It enables joint force access and enhances power projection by complementing existing basing. When the political situation restricts or denies basing, overflight, or U.S. presence, seabasing leverages forward presence to provide early availability of joint combat power to exploit unpredictable points of entry, even in austere environments. Exploiting opportunities created by maritime superiority and the sovereign freedom of operating from international waters, seabasing allows commanders to expand the joint maneuver space seaward. Through the protection provided by maneuvering platforms under a defensive shield, seabasing provides the opportunity to retain support functions (e. g. sustainment, fire support, medical, maintenance) at sea and reduces the need for the build-up of a large vulnerable support infrastructure ashore, particularly during the early stages of combat operations.

The foundation of seabasing is the seabase, an inherently maneuverable, scalable aggregation of distributed, networked platforms and organizations, capable of receiving deploying forces and supporting the employment of those forces. The capacity and capability of the seabase could increase over time as more platforms arrive in the operating area.

Joint forces rapidly close by a combination of means to the seabase, or locations in the objective area, where they organize for operations. These forces then project combat power ashore from the seabase. The seabase continues to support those forces during operations ashore.

Joint forces deploy directly from global locations to the seabase using high-speed inter- and intra-theater connectors (air/surface) where they join forward-deployed and prepositioned assets. Some deploying forces could link up with seabase platforms while enroute to the objective area. The joint forces assemble and organize at the seabase. Combinations of surface and air connector systems transfer assets among the platforms of the seabase as the force organizes for its mission.

seabased and global assets perform integrated force protection. The seabased portion of that protection is provided by assets organic to the seabase. These forces include surface combatants, submarines, aircraft, and air and missile defenses as well as assets organic to forces assembling at the seabase.

Forces maneuver from the seabase to operational depths ashore using a combination of air and surface means in austere environments. Depending on the situation, forces may continue to operate from the seabase, operating ashore only long enough to perform specific missions before returning to the seabase. As forces flow ashore, additional forces may deploy to the seabase as part of a continuous build-up of combat power. Seabasing operations may open additional early entry points for rapid continued build-up of forces ashore.

Throughout a campaign, seabasing provides persistent joint logistics to ensure continuous sustainment of select forces afloat and ashore. Seabasing capabilities that support projection and sustainment of joint combat power can also be used to recover, reconstitute, and redeploy select joint forces for further employment.

4. Senator TALENT. Admiral Crenshaw and General Mattis, what are the principal risks you must retire, or new technologies and capabilities which must be developed, in order to operate from the seabase?

Admiral CRENSHAW. The sea offers security and sovereign freedom of action for our Nation's forces. Our ability to operate from a seabase and to project and sustain operational forces from over the horizon contributes greatly to national security. However, seabase operations present unique technological challenges that must be fully addressed before our Nation can maximize our seabasing capabilities. Specific risk areas that must be addressed are: at-sea transfer of heavy cargo, advanced cargo handling systems, in-transit visibility/total asset visibility, en route collaborative planning and virtual rehearsal, automated warehousing, and selective offload. A number of our programs of record have made significant progress in researching and developing these technologies. Inroads have been laid with skin-to-skin ship operations, landing platform technologies, and advanced cargo handling.

The sea, influenced by geographic location, season, and weather, is a challenging environment. Sea states will vary and remain unpredictable, necessitating our ability to operate in a range of conditions. Our ships must be capable of skin-to-skin operations through sea state 4, permitting large-scale receipt and transfer of personnel, equipment, and supplies. This enables assembly of operationally significant forces at the seabase supporting a joint operational area, without reliance on land bases.

A principal risk to operating from the seabase is transferring personnel, cargo, and equipment in a challenging maritime environment. Skin-to-skin transfer, to include ramp systems, ship motion mitigation, crane pendulation control, and fendering systems, is a key enabler to personnel, cargo, and equipment transfer and requires system validation through sea state 4.

Another risk associated with seabase operations is selective offload, which includes our ability to efficiently stow, select, retrieve, and issue equipment and supplies from various ships at sea. Systems are being developed to improve handling, stowage, selectivity, and throughput of cargo onboard ship. Automation, such as the Automated Stowage and Retrieval System, will improve selective offload and assembly operations and has promise to decrease deployment and sustainment timelines.

We are making tremendous progress with evolving technological challenges. Our research and development (R&D) programs are on track and continue to fully support scheduled programs. For example, within the MPF(F) program, we are developing and validating systems and procedures to enable these technologies on these platforms. Tests were conducted in fiscal year 2005 to demonstrate skin-to-skin capabilities between an LMSR and a float-on/float-off ship as a surrogate for the MLP. Skin-to-skin operations were successfully conducted in sea conditions up to sea state 3. LCAC and other surface craft were able to interface with the MLP surrogate in sea state 3 conditions. Fiscal year 2006 testing will incorporate our lessons learned in fiscal year 2005, as we continue to mitigate these collective risks, while we explore new systems that permit skin-to-skin transfer and operations in progressively higher sea states.

General MATTIS. Our great Navy has been conducting elements of seabasing since the founding of our Nation. Seabasing is not a revolutionary concept but rather an evolutionary concept. Tomorrow's MPF(F) offers the Joint Force Commander a national capability of at-sea arrival and assembly, selective offload of tailored capabilities, seabased sustainment of the MAGTF ashore, and the reconstitution and deployment of the MAGTF for follow-on missions. MPF(F) will provide significant operational advantages in high threat, austere, anti-access environments and offer the Joint Force Commander the greatest flexibility in conducting the full range of military operations. In order to fully implement seabasing in support of joint forcible entry operations, the following risk areas require further development and experimentation:

- Layered sea shield force protection
- Amphibious command and control (C2) platforms, process, and command relationships
- Sufficient "intra" and "inter" high speed sea lift
- Technology advancement in
- Sea state 3 to 4 ramp development for vehicle transfer
- Motion mitigation systems to reduce ship movement
- Motion mitigation for cargo handling operations (gyro-stabilized cranes)
- Fendering technologies; including dynamic positioning systems
- Personnel transfer systems
- Automated storage and retrieval systems
- Continued investment in assault connectors (Expeditionary Fighting Vehicle (EFV), LCAC(X), etc.)

Lesson's learned from the prior years' experiments with platforms, such as the LMSR and the float-on/float-off vessels, are used in the development process. The efforts to date have been extremely encouraging in that the seabasing concept as supported by MPF(F) appears technically feasible. Much of the effort will leverage existing technology (such as a float-on/float-off vessel), but use it in innovative ways.

5. Senator TALENT. Admiral Crenshaw and General Mattis, how do you rank this capability amongst competing priorities; recognizing that the increasingly significant investment in the seabase comes to some extent at the expense of allowing gaps to form in submarine, surface combatant, and expeditionary strike capabilities?

Admiral CRENSHAW. The future Navy will remain seabased, with global speed and persistence provided by forward deployed forces, supplemented by rapidly deployable forces through the Fleet Response Plan (FRP). The MPF(F) Squadron is

only one part of the transformational seabasing capability as defined in the Seabasing JIC. Aircraft carriers, submarines, amphibious surface combatants, and logistics ships all contribute to this transformational capability and shape our Navy to meet current and emerging security responsibilities. The CNO has developed a shipbuilding plan that balances several factors to include operational requirements, affordability, and the ability of the industrial base to execute the plan. The force structure as defined in the "Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2007" was developed using a capability-based approach and anticipated threats for the fiscal year 2020 time period. This balanced approach builds the Navy the Nation needs—a Navy that is both affordable and meets the future national security requirements outlined in the Quadrennial Defense Review (QDR) with acceptable risk. Force structure requirements were developed and validated through detailed joint campaign and mission level analysis, optimized through innovative sourcing initiatives (FRP, Sea Swap, forward posturing) that increase platform operational availability, balanced with shipbuilding industrial base requirements.

General MATTIS. Our blue water Navy remains uncontested due to the balance of investments across all type ships. Recent history has proved that our Nation will require continued investment in our Navy's amphibious force offering significant operational advantages in high-threat, austere, anti-access environments and offer the Joint Force Commander the greatest flexibility in conducting the full range of military operations. The future seabase will center around the MPF(F), and will offer the Joint Force Commander a national capability of at-sea arrival and assembly, selective offload of tailored capabilities, seabased sustainment of the MAGTF ashore, and the reconstitution and deployment of the MAGTF for follow-on missions. The MPF(F) offsets the lack of sufficient strategic air and sea lift by having vital combat power prepositioned afloat and ready to employ. The MPF(F) Squadron is only one part of the transformational seabasing capability as defined in the Seabasing JIC. Aircraft carriers, submarines, amphibious surface combatants, and logistics ships all contribute to this transformational capability and shape our Navy to meet current and emerging security responsibilities. America's ability to use international seas and waterways, as both maneuver space and an operating base unconstrained by foreign veto, allows our naval forces to project combat power into the littoral regions which contain more than half the world's population and more than 75 percent of its major urban areas.

The strategic guidance and recent operational experience has institutionalized a shift in Marine Corps capability development. Amphibious capability and capacity represent key operational requirements to translate our dominance of the sea into relevant power and influence ashore. The ability to project credible joint combat power landward without fixed, vulnerable infrastructure concerns gives the Nation the ability to gain access at a time and place of our choice. These forces provide unparalleled flexibility to both political leaders and Joint Force Commanders. Historically, forcible entry capacity, based on a major combat contingency, was the primary consideration in determining the total amphibious lift requirement. In the new security era, the rotational requirements of maintaining forward postured forces may have equal, and perhaps even greater, significance in determining amphibious requirements.

FORWARD-BASING ATTACK SUBMARINES IN GUAM

6. Senator TALENT. Admiral Crenshaw, today, the Navy has three attack submarines forward-based in Guam. In conjunction with the Navy's recent announcement that it will focus 60 percent of the attack submarine force on operations in the Pacific, the force structure study makes aggressive assumptions that the number of attack submarines to be forward-based in Guam will be significantly increased. This increase to forward-basing allows for a reduction to today's submarine force without sacrificing operational effectiveness of the force. Alternatively, if the Navy is unable to execute these forward-basing assumptions, the future submarine force will be under-sized. Recognizing the importance of the forward-basing decision on the attack submarine force's size and effectiveness, what is the Navy's plan for basing additional attack submarines in Guam?

Admiral CRENSHAW. The Navy plans to homeport three attack submarines in Guam. There are presently two ships (U.S.S. *City of Corpus Christi* (SSN 705) and U.S.S. *Houston* (SSN 713)) homeported in Guam. U.S.S. *Buffalo* (SSN 715) will arrive in fiscal year 2007 as the third homeported ship. The Navy's Force Structure Assessment assumed three ships were homeported in Guam and three are sufficient to meet both warfighting and peacetime presence requirements.

7. Senator TALENT. Admiral Crenshaw, what assessments are being conducted to address vulnerabilities, facilities, and quality of service to support additional forward-based submarines?

Admiral CRENSHAW. We are in the process of developing a Global Submarine Infrastructure Plan (GSIP). This plan incorporates QDR guidance and future force structure plans. The GSIP addresses facilities, force protection, and quality of service for the submarine force worldwide. All submarine homeports, ports of call, maintenance and repair facilities, and crew swap locations are included in the plan. The GSIP will enable us to guide our submarine force ashore infrastructure investment both at home and at forward bases for years to come.

DD(X) DESTROYER AND NAVAL SURFACE FIRE SUPPORT

8. Senator TALENT. Admiral Crenshaw and General Mattis, the DD(X) program was initiated to fill the capability gap for naval surface fire support. The original requirement for 24–32 DD(X) ships, each with 2–155mm Advanced Gun Systems, was reduced to 12 ships, and then 10 ships in prior years, and is further reduced to 7 ships in the fiscal year 2007 budget. What has changed in the analysis of requirements and capabilities that allows the 7-ship DD(X) class to meet the mission originally envisioned for 24–32 ships?

Admiral CRENSHAW. DD(X), recently renamed DDG–1000, will fill the capability gap in naval surface fire support with its Advanced Gun System (AGS). As part of the development of the fiscal year 2007 budget, the Navy staff conducted a comprehensive review of joint warfighting demands through the 2020 time frame and the associated capability and capacity requirements. The Navy conducted extensive campaign analysis, against a wide spectrum of potential threats, to determine the sufficient mix of capabilities required to successfully defeat the threats. This demand was coupled with the routine, day-to-day operational demand for forces and other factors such as maintenance, training, and quality of life to develop an overall minimum force structure requirement. For DD(X), this corresponded to seven total ships.

Currently, DD(X) is expected to operate exclusively as part of the ESG typically comprised of an LHA/LHD, an LPD, an LSD, and two to three surface combatants. In previous years, the Navy planned on operating 12 ESGs, each with 2 DD(X). The analysis conducted as part of the fiscal year 2007 budget cycle indicates that nine ESGs, when coupled with an MPF(F) squadron, are sufficient to meet joint demands as depicted in the QDR with minimal risk. Additionally, analysis of the NSFS demand in the Office of the Secretary of Defense (OSD)/Joint Staff approved planning scenarios showed one vice two DD(X) per ESG as sufficient.

The combination of these changes in demands for DD(X) reduced the minimum requirement to seven ships. Seven DD(X) *Zumwalt* class ships are sufficient to provide each forward deployed ESG (including the Forward Deployed Naval Force (FDNF) ESG) with a DD(X) while maintaining sufficient surge capacity to meet NSFS requirements to support joint forcible entry demands for amphibious operations in a conventional campaign.

General MATTIS. The Marine Corps analysis of requirements and capabilities for the DD(X), as the planned second phase of the NSFS roadmap, has not changed. DD(X), in conjunction with the DDG's Extended Range Guided Munition (ERGM) fires, is a program of record planned to satisfy the Marine Corps' NSFS requirements. With two 155mm AGS and 600 Long Range Land Attack Projectiles per ship capable of engaging targets with precision accuracy in excess of 63nm (threshold), the DD(X) provides the range, lethality, and volume to address a larger piece of the target set, complementing the DDG's NSFS capabilities. DD(X) provides our first integrated, seabased counter-fire capability. In addition to its powerful sea strike capability, DD(X) will also provide significant capability as a sea shield asset for the seabase. Supporting analysis for the 24 ship requirement is contained in the 2002 DD(X) Spiral Design Review, and is consistent with the DD(X) operational requirements document validated in 2004. Given the current fiscal environment, we have accepted risk with fewer DD(X)s which will result in some unaddressed targets and increased time to accomplish the mission during a forcible entry scenario.

The Marine Corps believes strongly that the Navy is on the right track for delivering an effective NSFS capability. We have 230 years of common interest in this area and know that the transformational technology the Navy is developing will make NSFS relevant and vital to our concepts for conducting expeditionary maneuver warfare in the future. Our operational lessons from Iraq and Afghanistan emphasize the value of volume and precision fires. The same can be said for detecting enemy indirect fire weapons.

9. Senator TALENT. Admiral Crenshaw, what new assumptions are being introduced in the way the Navy plans to operate DD(X) to meet this mission?

Admiral CRENSHAW. DD(X), recently designated as DDG 1000, will operate in the same manner as the Navy's other surface combatants in terms of how it deploys, how frequently it deploys, and where it deploys. Currently, DD(X) is expected to operate in support of the combatant commanders' naval force presence requirements as part of the ESG, typically comprised of an LHA/LHD, an LPD, an LSD, and two to three surface combatants. The change in total ship requirements stemmed from analysis of the joint demand for DD(X)'s transformational operational capabilities, not a change in assumptions.

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

DD(X) LAND ATTACK DESTROYER AND FIRE SUPPORT REQUIREMENTS

10. Senator KENNEDY. General Gardner, the DD(X) land attack destroyer is being built largely to support shore fire support requirements. Originally, the Marine Corps said that they needed to have a firing rate from the DD(X) guns of 12 rounds per minute. Since then, the Navy changed the design to have a capability of firing 10 rounds per minute. Now the Navy has announced that they only intend to buy seven ships, rather than a much larger number of DD(X) destroyers. Does this reduced DD(X) program meet the Marine Corps' requirements?

General GARDNER. The Marine Corps analysis of requirements and capabilities for the DD(X), as the planned second phase of the NSFS roadmap, has not changed. DD(X), in conjunction with the DDG's ERGM fires, is a program of record planned to satisfy the Marine Corps' NSFS requirements. With two 155mm AGS and 600 Long-Range Land Attack Projectiles per ship capable of engaging targets with precision accuracy in excess of 63nm (threshold), the DD(X) provides the range, lethality, and volume to address a larger piece of the target set, complementing the DDG's NSFS capabilities. DD(X) provides our first integrated, seabased counter-fire capability. In addition to its powerful sea strike capability, DD(X) will also provide significant capability as a sea shield asset for the seabase. Supporting analysis for the 24 ship requirement is contained in the 2002 DD(X) spiral design review, and is consistent with the DD(X) operational requirements document validated in 2004. Given the current fiscal environment, we have accepted risk with fewer DD(X)s which will result in some unaddressed targets and increased time to accomplish the mission during a forcible entry scenario. The Marine Corps accepted the DD(X)'s reduced firing rate from 12 to 10 rounds per minute, since the change in rate of fire does not affect the average number of kills (rounds) per magazine, a more important aspect of a NSFS capability.

The Marine Corps believes strongly that the Navy is on the right track for delivering an effective NSFS capability. We have 230 years of common interest in this area and know that the transformational technology the Navy is developing will make NSFS relevant and vital to our concepts for conducting expeditionary maneuver warfare in the future. Our operational lessons from Iraq and Afghanistan emphasize the value of volume and precision fires. The same can be said for detecting enemy indirect fire weapons.

11. Senator KENNEDY. General Gardner, are there other measures that the Department of the Navy should be taking to compensate for this change?

General GARDNER. Recommendations for measures to compensate for the fiscal year 2007 DD(X) capability reductions are:

- Reinstatement of the auxiliary convertible magazine on DD(X). This increases the magazine capacity of the ship by 35 percent, and reduces resupply requirements. The auxiliary magazine capability would provide an additional 320 round capacity at a cost of roughly $19 million on the lead ship, and is at the top of the buyback list.
- Acceleration of the ERGM initial operational capability (IOC) or providing more rounds and ships available to fire ERGM at the currently planned IOC of fiscal year 2011.
- Continued development of electromagnetic launch as a science and tecnhology (S&T) long-term capability.
- Incorporating a NSFS capability into all future planned surface combatants to maximize return on investment of AGS technology and enhance flexibility of the force.

The Marine Corps believes strongly that the Navy is on the right track for delivering an effective NSFS capability. We have 230 years of common interest in this

area and know that the transformational technology the Navy is developing will make NSFS relevant and vital to our concepts for conducting expeditionary maneuver warfare in the future. Our operational lessons from Iraq and Afghanistan emphasize the value of volume and precision fires. The same can be said for detecting enemy indirect fire weapons.

Background information on the NSFS plan/DD(X) program is provided below:

> The Marine Corps analysis of requirements and capabilities for the DD(X), as the planned second phase of the NSFS roadmap, has not changed. DD(X), in conjunction with the DDG's ERGM fires, is a program of record planned to satisfy the Marine Corps' NSFS requirements. With two 155mm AGS and 600 Long Range Land Attack Projectiles per ship capable of engaging targets with precision accuracy in excess of 63nm (threshold), the DD(X) provides the range, lethality, and volume to address a larger piece of the target set, complementing the DDG's NSFS capabilities. DD(X) provides our first integrated, seabased counter-fire capability. In addition to its powerful sea strike capability, DD(X) will also provide significant capability as a sea shield asset for the seabase. Supporting analysis for the 24-ship requirement is contained in the 2002 DD(X) spiral design review, and is consistent with the DD(X) operational requirements document validated in 2004. Given the current fiscal environment, we have accepted risk with fewer DD(X)s which will result in some unaddressed targets and increased time to accomplish the mission during a forcible entry scenario. The Marine Corps accepted the DD(X)'s reduced firing rate, from 12 to 10 rounds per minute, since the change in rate of fire does not affect the average number of kills (rounds) per magazine, a more important aspect of a NSFS capability.

MINE WARFARE CAPABILITY

12. Senator KENNEDY. Admiral Crenshaw, this subcommittee has had a longstanding interest in the Navy's mine countermeasures programs. I understand the Navy is moving its mine warfare capability from minesweepers and minehunters to the LCS. I understand there are some problems with the remote minehunting system that would be used as a central part of the LCS mine warfare module. How is that effort going, and how are the other parts of the LCS mine warfare system progressing?

Admiral CRENSHAW. The Remote Minehunting System program has required extra effort within the last year to improve the overall reliability of the system. Recent at-sea testing demonstrated significant progress toward resolving reliability issues. The extra effort has resulted in an additional development cost of $31 million during fiscal years 2006 and 2007. Additionally, fiscal year 2006 procurement has been reduced from eight to four vehicles in order to allow us to request the reprogramming of the other $28 million within the Remote Minehunting System program. Also, due to the additional development efforts needed to improve reliability, the program's schedule has been reworked, and a full-rate production decision will be delayed by about 1 year. However, the new schedule still meets our commitment to deploy from a destroyer in 2007, as stated in the fiscal year 2007 U.S. Naval Mine Countermeasures Plan. The program will also be able to support the planned delivery to the LCS mine warfare mission module in 2007.

Current AN/AQS–20A Sonar Mine Detecting Set testing is focused on the integration of the AN/AQS–20A with the MH–60S helicopter in preparation for developmental and operational testing in fiscal year 2007. The testing program continues to overcome challenges to its schedule (weather delays, additional aircraft instrumentation, integration modifications) however, the program remains on track to support LCS with an AN/AQS–20A system and flight crew during the initial deployment.

The Airborne Laser Mine Detection System (ALMDS) is receiving additional effort to fully demonstrate one of its critical capabilities during Operational Testing. Recently, the Assistant Secretary of the Navy for Research, Development, and Acquisition approved a re-baselined schedule that provides the additional time and funding needed to incorporate more capable components and software into the system. The additional required development will cause a 1-year delay, pushing the full-rate production decision to the end of 2008. However, the revised schedule ensures one unit will be available for LCS when required. Development costs have increased by approximately $21.6 million and will be offset by a reduction in the number of ALMDS units procured in fiscal years 2007 and 2008. Units used for the offset will be procured in fiscal years 2011 and 2012.

The Organic Airborne and Surface Influence Sweep program is conducting contractor testing with efforts focused on improving towed dynamic stability. Alternative platform testing on the MH–53E helicopter is scheduled to begin in May 2006 with initial MH–60S flight-testing beginning in December 2006.

The Airborne Mine Neutralization System program completed neutralizer tank testing in December 2005. The program will conduct open-ocean testing and alternative platform flight-testing at the end of 2006, followed by MH–60S testing in 2007.

The Rapid Airborne Mine Clearance System (RAMICS) program is developing the initial prototype. The program has seen recent advancements such as the completion of the complex laser targeting gimbal. RAMICS does not begin testing on the MH–60S until the end of 2008.

RIVERINE CAPABILITY

13. Senator KENNEDY. Admiral Edwards, I've been reading about the riverine capability the Navy is developing. When the Army and Marine Corps moved into Iraq, they failed to take heed of many lessons about personnel protective equipment. As the Navy takes over the river missions the marines are doing in Iraq, what will you be doing to ensure the sailors are properly prepared?

Admiral EDWARDS. The Navy intends to ensure our sailors are properly equipped with the most advanced protective measures prior to taking over river missions from the marines in Iraq. These measures will include providing each deploying sailor with the best available (Interceptor) body armor with Small Arms Protective Inserts (SAPI) and equivalent head protection, rated at no less than National Institute of Justice (NIJ) Level III. These measures are capable of defeating 7.62mm X 39 AK–47 rounds. Riverine craft crewmen and boarding teams will also be equipped with flotation systems integrated with individual body armor systems. Additionally, each sailor will be equipped with full sets of individual protective equipment (IPE) that protects against possible chemical, biological, or radiological attack. Every deployable tactical vehicle assigned to each riverine squadron will be armored to the standard mandated by Commander, U.S. Central Command for Operation Iraqi Freedom, which will be at level I (factory installed) or level II (post-delivery installation) standard. Tactical vehicles will also be equipped with appropriate improvised explosive device (IED) electronic countermeasures (ECM) systems. Riverine craft initially provided by the marines and later organic to deploying Riverine Squadrons will be armored to a standard no less than NIJ level III and will also be equipped with IED ECM systems. Craft will also be equipped with high resolution/high magnification day/night mast-mounted imaging systems, complemented by personal and weapons mounted visual augmentation systems that will provide significantly enhanced tactical situational awareness.

SEABASING

14. Senator KENNEDY. Admiral Crenshaw, a central theme in the Navy's future capabilities is intended to be seabasing. We are very familiar with the previous Marine Corps discussions of "Operational Maneuver from the Sea" and "Ship to Objective Maneuver." We know that the Department has decided on a seabasing concept, which you call the MPF(F), that departs from previous discussions of such concepts as mobile offshore basing. This new concept involves having a squadron of 14 ships using some existing ship designs, as well as some new designs. As I understand it, with this new concept, you would have the capability to support one or two Marine Corps or Army brigades ashore. How much do you believe that the MPF(F) squadron will cost?

Admiral CRENSHAW. The Navy has determined that the one MPF(F) squadron of 14 ships will cost on average approximately $12.3 billion of new ship construction dollars. The composition of the 14 ships squadron includes two existing dense pack cargo ships, which will not require procurement dollars. MPF(F) is not the seabasing concept, rather it is a key enabler of seabasing. This squadron will accommodate one joint forcible entry operations capable MEB. It is also being designed to support the flow-through of sustainment for an additional Marine or Army brigade.

15. Senator KENNEDY. General Mattis, I understand that the Marine Corps would like at least one, and perhaps two, of these MPF(F) squadrons. How would these squadrons count toward your requirement to have 30 ships operationally available?

General MATTIS. In order to support JFEO, the Marine Corps shipbuilding requirement is two amphibious MEBs AE plus two MPF(F) MEBs (four MEBs total). The AE is the combat force leading the forcible entry of a contested/defended beach. The minimum lift requirement of the two MEB AE must consist of 30 operationally available amphibious ships, of which 10 must be operationally available big-deck aviation-capable ships to support the MEB Aviation Combat Element (ACE). The AE is distinctly different than the two MPF(F) MEBs. Each MPF(F) squadron will include one LHD, two LHA(R), three cargo and ammunition ships (TAKE), three fast logistics ships (T–AKR), three Mobile Loading Platform ships, and two legacy maritime prepositioning ships. This mix of ships will be capable of prepositioning critical equipment and 20 days of supplies for our future MEB.

Although one of the 14 MPF(F) ships, the LHD, is the same ship class as one of the 10 AE operationally available big-deck aviation-capable ships, further experimentation is required prior to suggesting that it can be used in the AE during the "fight to the beach" in joint forcible entry operations. This is primarily due to MPF(F) ships being manned by civilian mariners and the ships unique load-out as an afloat prepositioning capability with enhanced joint seabasing-related capabilities and technologies. We do, however, view the LHD and LHA(R) as having a secondary reinforcement role to amphibious platforms in the conduct of anti-access joint forcible entry operations. It is too early to commit MPF(F) as a substitute for amphibious ships. As mentioned above, more experimentation and testing are needed in order to provide "proof of concept" and capability before any amphibious fleet reductions can be seriously considered below the level necessary to meet 30 operationally available amphibious ships of the AE.

16. Senator KENNEDY. General Mattis, since three of the ships in the MPF(F) seabase would be LHA/LHD type amphibious assault ships, shouldn't we take some credit for such ships in meeting your requirements?

General MATTIS. In order to support JFEO, the Marine Corps shipbuilding requirement is two amphibious MEBs AE plus two MPF(F) MEBs (four MEBs total). The AE is the combat force leading the forcible entry of a contested/defended beach. The minimum lift requirement of the two MEB AE must consist of 30 operationally available amphibious ships, of which 10 must be operationally available big-deck aviation-capable ships to support the MER Aviation Combat Element (ACE). The AE is distinctly different than the two MPF(F) MEBs. Each MPF(F) squadron will include one LHD, two LHA(R), three cargo and ammunition ships (T–AKE), three fast logistics ships (T–AKR), three Mobile Loading Platform ships, and two legacy maritime prepositioning ships. This mix of ships will be capable of prepositioning critical equipment and 20 days of supplies for our future MEB.

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UP-ARMORED HIGH MOBILITY MULTIPURPOSE WHEELED VEHICLES

17. Senator KENNEDY. General Gardner, thank you for your explanation of the purpose of the unfunded requirement for armored high mobility multipurpose wheeled vehicles (HMMWVs). Could you clarify what the impact would be if this funding was not achieved?

General GARDNER. If we do not achieve funding, we will continue to use the vehicles currently on hand with the associated inefficiencies of trying to make aging equipment last longer. As verified by a new Inspector General (IG) report, our vehicles continue to age at an accelerated rate. Even the recently fielded up-armored HMMWVs (UAH) require depot level repair or replacement within as little as 2 years under current operating conditions in Iraq. When combat losses are added to an increased number of vehicles lost to increased maintenance there are simply fewer vehicles available to the commander in the field.

18. Senator KENNEDY. General Mattis, you noted that 90 percent of the HMMWVs operating outside the bases in Iraq are armored. We had been previously informed that all HMMWVs operating off-base were armored. Could you clarify your remark?

General MATTIS. All of our wheeled tactical vehicles that operate outside forward operating bases are armored at either level I or level II protection. All Marine Armor Kits (MAKs) requirements for our base HMMWV and A2 models were achieved in November 2005 (2,992 vehicles). As of May 1, 2006, we have fielded 1,750 M1114 HMMWVs. Our M1114 operational requirement will be complete in July 2006 (2,502 vehicles) leaving 312 sustainment vehicles to be delivered by November 2006 for a total of 2,814 M1114s to meet the Marine Corps Central Command (MARCENT) requirement. The Medium Tactical Vehicle Replacement (MTVR) Armor System (MAS) requirements will be complete by the end of this month (May 2006).

During the hearing, Lieutenant General Gardner responded to the chairman's question (asked on behalf of Senator Kennedy) about the status of HMMWV vehicle armoring. The following quote, "We should be complete in July of this year. Right now, basically we have—probably 90 percent of the troops going outside the wire are already in them," was Lieutenant General Gardner's response referring to M1114 up-armored HMMWVs. We look forward to completing the fielding of our operational requirement of 2,502 M1114s by July 2006. By November of this year, through a replacement program, our forces in-theater will have 2,814 M1114s and 1,034 HMMWV A2s with MAK (per MARCENT requirements).

LONG-TERM AFFORDABILITY

19. Senator KENNEDY. Admiral Crenshaw and General Gardner, I understand the CNO is doing a long-term aviation affordability review to parallel his shipbuilding study. What will this study entail and when will the Navy complete it?

Admiral CRENSHAW. The CNO is conducting an ongoing review of aircraft requirements and affordability for fiscal year 2008 through fiscal year 2020 to inform his decisions in the POM–08 process. POM–08 will determine the fiscal years 2008–2013 future years development plan. The long-term aviation affordability review is covering the many elements that affect the Navy's aircraft plan, including the number of required aircraft, unit cost, annual procurement rate, and service life remaining on current inventory, and progress in new aircraft development programs. These procurement considerations must be weighed against questions concerning sustainment and growth potential in terms of meeting evolving warfighting requirements. Existing missions are also being evaluated in light of joint service requirements and capabilities.

This ongoing aviation review is similar to the shipbuilding study only in that it attempts to inform important recapitalization decisions. It does not include a goal for a specific total number of aircraft like the 313 ships in the shipbuilding plan. Aircraft procurement planning generally does not have the same level of impact to the industrial base as shipbuilding. Therefore, this assessment, or study, does not produce a document similar to the 30-year shipbuilding plan delivered annually to Congress. While the internal Navy review supports POM 08, there is also a more comprehensive OSD report concerning TACAIR requirements which will report out in the October 2006 timeframe. The result of this OSD effort will almost surely require us to conduct another aviation review to support the next budget cycle.

General GARDNER. The CNO is conducting an ongoing review of aircraft requirements and affordability for fiscal year 2008 through fiscal year 2020 to inform his decisions in the POM–08 process. POM–08 will determine the fiscal years 2008–2013 FYDP. The long-term aviation affordability review is covering the many elements that affect the Navy's aircraft plan, including the number of required aircraft, unit cost, annual procurement rate, service life remaining on current inventory, and progress in new aircraft development programs such as JSF and Multimission Maritime Aircraft (MMA). These procurement considerations must be weighed against questions concerning legacy aircraft capacity and capability and include an assessment of remaining service life and growth potential in terms of meeting evolving war fighting and technology requirements. Existing missions are also being evaluated in light of joint service requirements and capabilities.

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internal Navy review is complete for POM–08, there is a more comprehensive OSD report concerning TACAIR requirements which will report out in the October 2006 timeframe. The result of this OSD effort will almost surely require us to conduct another aviation review to support the next budget cycle.

EXPEDITIONARY FIGHTING VEHICLE

20. Senator KENNEDY. General Mattis, I am concerned about the force protection capabilities of the expeditionary fighting vehicle (EFV). The EFV's key performance parameter relating to armor protection has a threshold requirement of protecting against 14.5 millimeter rounds at 300 meters and an objective requirement of protecting against 30 millimeter rounds at 1,000 meters. I understand that the objective requirement will not be met for the base vehicle, and that the Marine Corps is not pursuing an add-on armor capability to meet the objective requirement.

I am also concerned about the underbody protection which I understand only provides protection up to a 2.2 pound mine. This is significantly less than an up-armored HMMWV which provides protection against a 12 pound mine in the front and a 4 pound mine in the rear. Do not the Iraq lessons learned about armor protection also make you concerned about the survivability of the EFV? What do you intend to do about it?

General MATTIS. By design, the EFV's primary role in combat operations is in respect to the amphibious aspect of maneuver warfare. From the over the horizon swim, to breeching a defended shoreline, to quickly advancing deep inland to the objective, the EFV will protect our most valuable asset (the marine) per its intended design. The Marine Corps has designed the EFV to perform a mission that requires balance in its capabilities. Land and water speed, mobility, firepower and lethality, communications, and capacity to carry a reinforced rifle squad have been balanced along with the force protection and survivability capabilities. An increase in armor protection using today's technology would add weight, size, and cost to the EFV. As light weight armor technology further advances, we will procure materiel solutions to enhance the EFV where applicable.

Global war on terrorism lessons learned with respect to the IED threat proves that use of IEDs is more consistent with sustained operations ashore following maneuver to the objective. During OEF/OIF decisive operations, IEDs were not a significant threat until after the Iraqi government was removed and coalition forces were assigned zones to conduct security and sustainment operations (SASO). Using tactics, techniques, and procedures, through lessons learned, our existing Assault Amphibian Vehicle (AAV) units participating in OIF SASO operations are primarily conducting "dismounted" operations and are also used as a Quick Reaction Force and in reinforcing roles. By design, our armored HMMWVs and MTVR trucks, and Light Armored Vehicles (LAVs) are the primary tactical vehicles used to conduct SASO operations.

JOINT IMPROVISED EXPLOSIVE DEVICE NEUTRALIZER

21. Senator KENNEDY. General Gardner, last month the media reported that the deployment of the Joint IED Neutralizer (JIN) to Iraq was delayed by the Joint IED Defeat Organization (JIEDDO) pending further testing. However, it was also reported that the Marine Corps decided to circumvent the testing schedule and send JIN units to al Anbar province for use by the marines there. According to the media, based upon its performance there, Marine commanders have said that they hope it can eventually be used throughout Iraq. To the extent that you can answer this in an open forum, why did the Marine Corps differ with the JIEDDO and decide to send JIN units to Iraq?

General GARDNER. In understanding the context of the question, the Marine Corps did not differ with the JIEDDO. The Marine Corps conducted an independent review of JIN when JIEDDO proffered systems previously declined by Multi-National Corps Iraq (MNC–I). At the conclusion of the Marine Corps review, JIEDDO sponsored a demonstration of JIN for the Commanding General of Marine Forces Central Command (CG MARCENT) and other senior Marine commanders at the Army National Training Center (NTC). Subsequent to this demonstration, CG MARCENT decided that an operational evaluation of JIN in its current state would place marines at risk without bringing a corresponding increase in capability and the Marine Corps did not deploy JIN to Central Command (CENTCOM). This decision was made by the warfighting commander for operational reasons and was not influenced by JIEDDO or the Marine supporting structure.

22. Senator KENNEDY. General Gardner, what has the Marine Corps learned, and what recommendations does the Marine Corps have with respect to further deployment of the JIN?

General GARDNER. [Deleted.]

RESETTING THE FORCE

23. Senator KENNEDY. General Gardner and Admiral Crenshaw, the Marine Corps estimate for "resetting" the Marine Corps from the Iraq conflict is $11.7 billion. Does this estimate include all of the funding for Marine equipment, particularly aircraft, procured through the Navy—so-called "blue in support of green" money?

General GARDNER. Of the $11.7 billion total Marine Corps reset the force estimate, approximately $2.7 billion is "blue in support of green." Most of this requirement ($2.5 billion) is for procurement of aviation systems such as the MV–22, CH–53, or the restoration of other aircraft to serve as "gap-fillers" until successor platforms enter the inventory. The remaining requirement is spread across several appropriations, with $100 million for depot level maintenance of aviation assets and $100 million for weapons, ammunition, research and development, and other procurement.

Admiral CRENSHAW. The Navy submitted an estimate for "resetting" the force following the Iraq conflict. With regard to aircraft, the Navy's estimate does not include Marine Corps aircraft.

SUBMARINE DESIGN CAPABILITY

24. Senator KENNEDY. Admiral Crenshaw, I appreciate your concern for the potential loss of submarine design capability. While you are focusing your continued design work on cost reduction initiatives, I would ask you to look at modifying the *Virginia* class design to support a mixed gender crew. This would increase the potential pool of talent available to serve in our submarine force, perhaps reducing recruiting and retention costs. Would this be possible for a *Virginia* class modification and for future submarine designs?

Admiral CRENSHAW. The Navy recognizes assigning women to submarines offers potential advantages, and we continue to review this periodically. However, due to their very unique space limitations, equipment density, and design constraints, Navy policy currently remains unchanged. Our experience and commitment with integrating women on other platforms is not necessarily a model for change on submarines due to the unique submarine environment and mission.

Although the *Virginia* class design incorporates improvements in habitability over previous submarine classes, it does not provide berthing and sanitary facilities of appropriate size for a mixed gender crew. To provide berthing and sanitary facilities of appropriate size for a mixed gender crew would require significant arrangement modifications to the *Virginia*'s design. Redesign of the *Virginia* class to accommodate mixed gender crews would increase cost at a time when Navy's goal is to reduce *Virginia*'s cost to $2.0 billion (fiscal year 2005$).

The submarine force continually reviews personnel recruitment and assignment policies to expand and diversify available talent. As the requirements for future submarine designs are developed, the incorporation of mixed gender crews will continue to be reviewed.

[Whereupon at 5:30 p.m., the subcommittee adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2007

TUESDAY, APRIL 4, 2006

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington DC.

POSTURE OF THE U.S. TRANSPORTATION COMMAND

The committee met, pursuant to notice, at 3:37 p.m. in SR–222, Russell Senate Office Building, Senator James M. Talent (chairman of the subcommittee) presiding.

Committee members present: Senators Talent and Kennedy.

Majority staff members present: Stanley R. O'Connor, Jr., professional staff member; and Sean G. Stackley, professional staff member.

Minority staff member present: Creighton Greene, professional staff member.

Staff assistants present: Micah H. Harris and Jessica L. Kingston.

Committee members' assistants present: Christopher J. Paul, assistant to Senator McCain; Lindsey R. Neas, assistant to Senator Talent; and Mieke Y. Eoyang and Joseph Axelrad, assistants to Senator Kennedy.

OPENING STATEMENT OF SENATOR JAMES TALENT, CHAIRMAN

Senator TALENT [presiding]. We'll go ahead and start the hearing. I know Senator Kennedy has been on the Senate floor debating, and I understand he is on the way. In the past, what we have done is gone ahead and begun hearing, and then when the Senator arrives, we'll just stop and have him give his opening comments and then proceed with the hearing.

The subcommittee meets today to receive testimony on the posture of the United States Transportation Command (USTRANSCOM) and strategic lift capabilities in review of the National Defense Authorization Request for Fiscal Year 2007. We are very pleased to have with us today General Norton A. Schwartz, who is the Commander of USTRANSCOM, and General Duncan McNabb, who is the Commander of the Air Mobility Command (AMC). I want to welcome you gentlemen. Thank you for taking the time to be with us today to offer your opinions on a wide variety

of important subjects, and especially I want to thank you for your outstanding leadership and service to the country in very crucial times.

Our Nation's position of international leadership is inseparable from our ability to provide persistent strategic lift of personnel and material to every corner of the globe virtually on demand. Whether it's sustaining operations in Iraq and Afghanistan or performing the broad missions of peacekeeping operations, humanitarian relief operations, joint service operations, and emergent response throughout the world, the performance of the airmen, the soldiers, the sailors, and the merchant marines conducting these lift operations every hour of every day deserve our highest praise. It's an honor for me to say to you two how deeply proud we are of the men and women under your command serving around the world and to offer through you our most sincere gratitude for their service and their family sacrifice.

The purpose of today's hearing is to discuss the posture of the USTRANSCOM and the vision for future strategic lift capabilities. We are particularly interested in your views of the effect current operations are having on the Nation's mobility forces, experience gained in support of the growing number of lift requirements, and challenges faced by the regional commanders. Today's first priority must be to meet the demands current operations in Iraq and Afghanistan are placing on our forces. At the same time, however, we are tasked with sizing and shaping the future force. In so doing, we must employ the lessons learned from today's operation to ensure our ultimate ability to meet future challenges to our national security.

The subcommittee is interested in your current direction regarding the USTRANSCOM's force structure and the results of the Mobility Capability Study (MCS). I note with concern the variance between the underlying assumptions of the MCS and the more demanding conditions experienced by our lift forces as they adapt to uniquely stressing mission profiles and unplanned loading scenarios. In particular the C–17 Globemaster, which has been the workhorse for lift operations in Iraq and Afghanistan, is experiencing accelerated airframe wear and tear, leading ultimately to accelerated attrition.

I understand that you have initiated a follow-on study, the Focus Mobility Analysis, to address the strategic airlift mix of aircraft. I'm certainly going to be interested in learning your reasons for that new analysis and the results when they are ready. In the interim, and in view of the influence that the MCS may have had on the Quadrennial Defense Review (QDR) and the fiscal year 2007 budget request, it is important that today's hearing follow through in the assessment best characterized by the Deputy Secretary as he stated at the Senate Armed Services Committee hearing on the QDR, that the Air Force may have to buy more than the 180 C–17 transport planes now envisioned because C–17s are wearing out rapidly in the war. This budget cycle provides a critical opportunity to act upon this fact of life observation, which is notably consistent with the Air Force's top unfunded requirement prior to any irreversible decisions regarding C–17 production.

In conjunction with C–17 procurement planning, we are also interested in your updated assessment of ongoing efforts to modernize the C–5 Galaxy aircraft through the Avionics Modernization Program and the Reliability Enhancement and Reengining Program. These efforts are critical to meeting established airlift requirements in support of the national military strategy.

As well, we welcome your insights regarding future force planning and the role to be formed by the Civil Reserve Air Force (CRAF). Recognizing the criticality of this lift component, we are interested in your assessment and recommendations regarding employment of CRAF assets for future defense planning scenarios.

This subcommittee has played a significant role in support of strategic mobility in the past. We consider it a very important area of our oversight jurisdiction. We look forward to working with you and your staff as we move forward on this budget to provide the resources necessary for continued successful performance of these operations while also helping to shape the future USTRANSCOM.

Again gentlemen, I thank you for joining us today. We look forward to the candid expression of your views on these various subjects as we have always had them in the past. I see Senator Kennedy hasn't arrived yet, so let's go ahead and start with your statements. General Schwartz, why don't you begin and give us your statement? Then when Senator Kennedy comes, at the first convenient opportunity, we will break so he can give his opening remarks.

STATEMENT OF GEN. NORTON A. SCHWARTZ, USAF, COMMANDER, U.S. TRANSPORTATION COMMAND

General SCHWARTZ. Chairman Talent, it truly is a privilege to be with you today representing the more than 152,000 military and civilian men and women that comprise the USTRANSCOM and that today are serving the Nation around the world. USTRANSCOM's success begins with our people, their dedication, and their vision and hard work, which continue to improve our ability to support national objectives.

Our people are the heroes who make it happen and get it done. We are a Nation at war, sir, and supporting the warfighter is our command's number one priority. USTRANSCOM's imperative is to provide outstanding support to the warfighter and the Nation by rapidly delivering combat power to the joint force commander, effectively linking operating forces to their sustainment processes and systems, redeploying forces who have served their time in combat, and moving wounded and injured troops to locations where they can receive the very best care.

As the Department of Defense's distribution process owner, USTRANSCOM leads a collaborative effort within the logistics community to develop system-wide distribution system improvements. We execute USTRANSCOM's global mission through our component commands—the AMC of the Air Force, the Navy's Military Sealift Command, and of course, the Army's Military Surface Deployment and Distribution Command (SDDC). I am honored to have today the Commander of the AMC, General Duncan McNabb, with me before the subcommittee today.

Our components provide the mobility resources and know-how in packages capable of seamless transition from peace to war. Despite

the very substantial military force structure that the components do bring to bear, sir, USTRANSCOM will always be dependent on a mix of Government-owned and commercial assets. It is through the combination of military and commercial capabilities that USTRANSCOM fields a military transportation and distribution system that is unmatched anywhere on the planet. I could not be prouder of the USTRANSCOM team and our national partners. Today, we are supporting the global war on terrorism while recently providing humanitarian assistance and relief in both America and in nations abroad. Together, we are transforming the military deployment and distribution enterprise, ensuring our Nation's ability to project national military power wherever and whenever the need may arise. In all of this, our commitment is that a promise given by us will be a promise kept.

I am grateful to you, sir, and the subcommittee for having us before you today for the essential support that you provide in enabling our capabilities, and I am ready to take any questions that you may have. Mr. Chairman, with your permission, may I ask that my prepared statement be submitted for the record?

Senator TALENT. Sure, without objection, and I appreciate your summarizing it, General. Again, I appreciate how you carry out your responsibilities. I have visited USTRANSCOM, and it's just unbelievable, the number of men and women and the amount of material that you move everyday, and you actually keep track of it all while you are doing it, and it's pretty incredible.

General SCHWARTZ. Not all of it.

Senator TALENT. I said your remarks would be candid and they are.

General SCHWARTZ. Yes, sir.

[The prepared statement of General Schwartz follows:]

PREPARED STATEMENT BY GEN. NORTON A. SCHWARTZ, USAF

INTRODUCING THE UNITED STATES TRANSPORTATION COMMAND (USTRANSCOM)

Mission / Organization

As a unified combatant command (COCOM), USTRANSCOM provides the synchronized command and control, transportation, distribution, and sustainment which make possible projecting and maintaining national military power where needed, with the greatest speed and agility, the highest efficiency, and the most reliable level of trust and precision. USTRANSCOM's imperative is to provide outstanding support to the warfighter through effective operation of the Defense Transportation System (DTS) and by providing global patient movement. Further, as the Department of Defense's (DOD) Distribution Process Owner (DPO), USTRANSCOM leads a collaborative effort amongst the logistics community to develop system-wide distribution process improvements. To accomplish USTRANSCOM's global joint mission we rely upon our component commands: the Air Force's Air Mobility Command (AMC), the Navy's Military Sealift Command (MSC), and the Army's Surface Deployment and Distribution Command (SDDC). Our components provide mobility forces and assets in a force structure capable of seamless transition from peace to war. But there is one reality that will not change: we'll never be able to own all the aircraft and ships we need—USTRANSCOM will always depend on a mix of Government-owned and commercial assets. We simply cannot do business without our commercial partners. Together we "Make it Happen and Get it Done."

Our wartime objectives are to get the warfighter to the fight, sustain the warfighter during the fight, rapidly maneuver the tactical warfighter, get the wounded warfighter to needed care, and return the warfighter home to family. Whether it is the lives of our sons and daughters, sums of wealth, or commercial partner contributions, the portion of our Nation's treasure entrusted to us is precious and we must be good stewards of that trust.

The operating tempo (OPTEMPO) of the Nation's mobility forces remains high as they support the ever growing number of requirements and challenges faced by the regional combatant commanders. It is important to note that USTRANSCOM is only postured—from a force structure perspective—as a one major war force. Regardless, USTRANSCOM supports not one, but all combatant commanders simultaneously, placing a premium on our lift assets. Additionally, USTRANSCOM's ability to support multiple competing demands is constrained by access and force flow dynamics. Our limited transportation assets rely on an optimized force flow to meet demands.

Enduring Themes

In a dynamic political-military environment, requirements can quickly exceed capabilities. USTRANSCOM's challenge is to meet the warfighters' requirements while continuing our leading role in the transformation of the DOD supply chain. Three themes guide our course:

- Theme One: Investing in the care and quality of USTRANSCOM's most valuable resource—our people.
- Theme Two: Continued transformation of key processes, leveraging information technology to provide seamless, end-to-end distribution management for defense.
- Theme Three: Maintaining force readiness and continuous modernization to perform our global mobility mission.

USTRANSCOM IN 2005

Meeting Our Commitments to the Nation

The year 2005 found the Nation at war and USTRANSCOM met the expectations of a nation on a wartime footing. Our greatest commitment remained supporting the global war on terrorism and its three primary operations, Operations Iraqi Freedom (OIF), Enduring Freedom (OEF), and Noble Eagle (ONE). As in every year since 2001, OIF and OEF mobility requirements were sizeable: total deployment, redeployment, sustainment, and rest and recreation airlift by AMC moved 1,188,084 passengers and 457,670 short tons. MSC and SDDC's contributions were equally striking with 169 vessels delivering 1.89 million short tons (36.9 million square feet). MSC's point-to-point tankers also delivered over 1.77 billion gallons of fuel supporting worldwide DOD requirements. Our airborne tankers, a critical power projection capability, offloaded 1,016.68 million pounds of fuel in support of OIF and OEF. Their role in ONE was also significant as tankers offloaded 20.18 million pounds, replenishing combat air patrol fighters guarding major U.S. cities and critical infrastructure.

Our most urgent responsibility in 2005 has been assisting U.S. Central Command (USCENTCOM) in defeating the terrorists and neutralizing the insurgency in Iraq. The magnitude of that effort was enormous. For example, MSC, only one of the three USTRANSCOM components, provided 11,302,666 square feet (565,133 short tons) of cargo to USCENTCOM. AMC and SDDC contributions were of similar scale.

Of utmost importance for USCENTCOM was the movement of armored vehicles and add-on armor kits. In calendar year 2005, SDDC, via MSC organic and chartered ships and SDDC liner service vessels, shipped 6,294 Level I Up-Armored Humvees (HMMWVs) or 115 percent of the 5,473 required by USCENTCOM Army Forces (ARCENT). This total would fill 3.15 large, medium speed, roll-on/roll-off (LMSR) *Bob Hope* class vessels. The timely delivery of Level II armor, factory-built, add-on-armor kits, has also been a pressing priority. During 2005, AMC airlifted 14,909 short tons of Level II kits for ARCENT, totaling 25,827 kits. AMC also lifted 78 special purpose Improvised Explosive Device-resistant vehicles weighing 1,098 short tons. Between June and August 2005, SDDC shipped 763 5-ton truck Level II kits weighing 2,270 short tons to ARCENT. USTRANSCOM also met Marine Corps armor needs by shipping 966 Level I Up-Armored HMMWVs amounting to 2,270 short tons and the airlift of 3,102 short tons of Level II armor, for a total of 3,276 kits. The total Level II airlift tonnage for the Army and Marine Corps was equivalent to 798 fully loaded C–5 aircraft. Movement of Level III armor, a locally fabricated steel kit, was completed on 14 February 2005.

Force rotations of units to and from Iraq and Afghanistan have remained a cornerstone of our OIF/OEF mission. Between January and March 2005, AMC airlifted 250,000 passengers and over 11,000 short tons while MSC and SDDC moved more than 711,000 short tons via sealift. This year, USCENTCOM and USTRANSCOM adjusted rotations to meet increased security needs during Iraqi elections and minimized movements during the holiday season at home. When the current rotation completes in spring 2006, AMC will have moved 227,992 passengers and 17,313

short tons by air, along with 530,000 short tons moved by MSC and SDDC by surface.

Other support requirements often have been inescapable during our OIF/OEF force rotations, such as unplanned natural disasters which required an immediate domestic response.

After Hurricane Katrina devastated New Orleans and the Gulf Coast, DOD deployed 20 people to supplement Federal Emergency Management Agency (FEMA) operations planning at Fort Gillem, GA. Fourteen of the 20 people came from USTRANSCOM and its component commands along with five from the Defense Logistics Agency (DLA) and one from the Maritime Administration (MARAD). The one-two punch of Hurricanes Katrina and Rita prompted a major response from our mobility forces. During Katrina, AMC used organic assets in the form of a contingency response group (CRG) to reestablish airfield operations followed closely by airlifting relief supplies totaling 339 sorties, 13,717 patients/evacuees and 5,170 short tons of relief supplies. Air National Guard (ANG) support operations totaled 3,087 sorties, 30,898 passengers, and 10,834 short tons. SDDC support included the redeployment of 82nd Airborne and 24th Marine Expeditionary Unit equipment, consisting of 1,342 pieces of equipment totaling 183,000 sq. ft. (9,150 short tons) of cargo, and the procurement of approximately 250 buses for movement of personnel. At the request of FEMA, MSC contracted 4 cruise ships berthing over 7,000 evacuees and relief workers, while the MSC vessels U.S.N.S. *Pollux, Altair,* and *Bellatrix* provided over 130 tons of water and 1.4 million gallons of fuel.

Katrina and Rita thankfully were not as massively destructive as the tsunami which roared ashore in several Asian nations on December 26, 2004. USTRANSCOM contributed to Operation Unified Assistance without interrupting or slowing the OIF/OEF "surge" rotation. Total airlift for the relief effort amounted to 2,943 passengers and 3,786 short tons. One chartered ocean liner delivered 320 short tons of high energy biscuits and another vessel redeployed just under 2,000 short tons of equipment.

Another tragedy was the 7.6 magnitude earthquake which killed thousands in Pakistan on October 6, 2005. This terrible situation threatened to become even worse since the seismic activity left thousands injured and homeless in remote locations with the approaching cold temperatures of winter. An AMC C–17 loaded with relief supplies left Bagram, Afghanistan for Pakistan on October 9, less than 48 hours after the earthquake, and additional supplies, including 21 urgently needed helicopters, were subsequently airlifted from bases in the United States to Pakistan. By late January 2006, AMC's airlift to Pakistan totaled 1,674 passengers and just over 5,549 short tons of critical relief supplies.

Amid all these urgent requirements, USTRANSCOM turned over the management and reporting of the airlift and sealift for the National Science Foundation's (NSF) annual research in Antarctica to U.S. Pacific Command (USPACOM). Known as Operation Deep Freeze, mobility totals from the 2004–2005 season show how large the operation can be, with 573 airlift missions transporting a total of 7,032 passengers, 5,340 short tons, and 696,214 gallons of fuel. Two MSC supply ships replenished the NSF station with 10,964 short tons and 6.1 million gallons of fuel. Despite the shift in oversight, USTRANSCOM still fulfills needs in Antarctica, providing a C–17 for the airlift mission from New Zealand to Antarctica and nine specially trained crews from the New York ANG to fly LC–130 missions.

Our Nation's sons and daughters fight like they train and USTRANSCOM understands the importance of meeting our customers' training needs without sacrificing the effectiveness of wartime mobility operations. For example, by collaboratively managing transportation requirements with USCENTCOM, USTRANSCOM assisted USCENTCOM conduct of Exercise Bright Star, its longstanding field training exercise, for the first time since 2001. In contrast to the large-scale Bright Stars of the era before the global war on terrorism, Bright Star 05 held the number of airlifted forces to 14,038 passengers and 2,207 short tons. Three vessels moved 37,269 short tons for Bright Star, far fewer than in years past.

Similarly, the combined USPACOM exercise in the Republic of Korea, Reception, Staging Onward Movement and Integration (RSO&I)/Foal Eagle and Unified View 2005, a shared effort by U.S. Joint Forces Command (USJFCOM) and USTRANSCOM to integrate deployment and distribution processes were also adjusted in scope. Collaborative requirements management to meet both critical training and wartime needs is essential and makes good sense.

Conducting "normal" operations effectively in demanding times extended to the highly visible mission of providing Presidential airlift. AMC aircraft supported six foreign trips by President Bush during 2005. This support amounted to 5,263 passengers and 5,368 short tons, enabling the President to consult with the leaders of three allied nations in Western Europe, to pay his respects at the funeral of the late

Pope John Paul II in Italy, to observe the 60th anniversary of the end of World War II in Europe, to take part in a Latin American summit meeting in Argentina, and to attend the Asia Pacific Economic Conference in South Korea.

In 2005, USTRANSCOM continued meeting new DOD requirements supporting defense support to civilian authorities (DSCA) missions. In coordination with United States Northern Command's (USNORTHCOM) Joint Task Force Civil Support (JTF–CS), USTRANSCOM is refining ground and air transportation options to provide rapid access and deliver consequence management forces to chemical, biological, radiological, nuclear, and high yield explosive (CBRNE) affected sites. Additionally, USTRANSCOM, in coordination with USNORTHCOM's Joint Task Force National Capital Region (JTF–NCR), is tailoring rapid high-priority airlift for survivability and emergency medical evacuation of senior Government officials to ensure continuity of our Nation's governing bodies.

In addition, USTRANSCOM provided immediate response airlift for three Quick Reaction Force (QRF) deployments, requiring 12 missions covering each U.S. QRF sector. AMC logged approximately 1,000 man-days supporting heightened QRF response postures for high-visibility world events, including the G8 Summit and Hurricane Katrina. These deployments honed joint processes with USNORTHCOM and exercised our immediate response capabilities.

USTRANSCOM and AMC also provided wildland firefighting support. Air National Guard and Air Force Reserve C–130 units, equipped with the Modular Airborne Fire Fighting System (MAFFS), were used to knockdown emerging fires. MAFFS aircraft and crews flew 332 sorties and performed 343 retardant airdrops, preventing millions of dollars in damage and saving countless acres of forest and wilderness areas. USTRANSCOM and AMC are working with the National Guard Bureau and National Interagency Fire Center to field a more reliable and capable MAFFS II system on the C–130/C–130J in July 2006.

Patient movement, one of our more poignant missions, transports America's wounded and sick warriors, including battlefield casualties, to higher levels of care. During calendar year 2005, USTRANSCOM supported 24,942 Patient Movement Requests (PMR) worldwide. USTRANSCOM's Joint Patient Movement Requirements Center (JPMRC) performed as a patient movement management cell coordinating the movement of personnel from the war zones in Iraq and Afghanistan back to Europe and the United States. Their unparalleled level of care combined with the safe and efficient movement to higher levels of care enhanced patient survivability, reaching nearly 90 percent today. The DOD patient movement system, and in particular aeromedical evacuation, has transformed into a one-of-a-kind asymmetrical asset. No other nation on earth has the capability to care for and move her most vital possession, her people, as safely or effectively in war and in peace. USTRANSCOM moved 3,813 patients via the National Disaster Medical System during Hurricanes Katrina and Rita. We are proud of our unwavering commitment to bring every warfighter home from the fight. This promise given to our warfighters will continue to be a promise kept.

PEOPLE: USTRANSCOM'S GREATEST ASSET

Shortages/Areas of Concern

Operational outcomes such as those recounted previously require exceptionally dedicated professionals. USTRANSCOM's mobility team, comprised of Active-Duty, Reserve, National Guard, civilian, and contractor personnel, is literally the engine that powers force projection. Meeting the needs of our people in terms of manning and quality-of-life issues leads to increased readiness, and higher retention, and is absolutely the right thing to do.

The global war on terrorism is requiring us to employ our mobility assets in new and demanding ways. The stress is evident in several key fields. In order to meet the high demand for C–130s, the command hosted a global sourcing conference that affected other COCOMs and Services. Currently, we are using four U.S. European Command (USEUCOM), four USPACOM, and four Navy-assigned C–130s to offset high temporary duty (TDY) rates for USTRANSCOM-assigned C–130 units. In a post-mobilization setting (majority of Air Force Reserve Command (AFRC) C–130 mobilization ends summer 2006, some residual ANG/AFRC mobilization capability remains) Active-Duty intratheater aircrew TDY rates will likely increase approximately 20 percent, if requirements remain constant. In addition, as C–17 Theater Direct Delivery (TDD) capability is used to further offset C–130 deployments, C–17 utilization and TDY rates will also increase. We face a similar scenario with tanker assets.

More than any other COCOM, USTRANSCOM relies on the Reserve component (RC) for peacetime responsiveness and wartime capability. The RC provides approxi-

mately 56 percent of USTRANSCOM's personnel, 57 percent of continental U.S. (CONUS) surface lift capability, and 59 percent of airlift capability. In fact, the Air Reserve Component (ARC) operates 30 percent of outsize/oversize airlift fleet (C–5s and C–17s), owns more than 62 percent of the KC–135 force, and over 61 percent of our fleet of C–130s.

High rates of RC volunteerism for intertheater airlift and tanker missions have filled a shortfall in capabilities the Active-Duty has been unable to provide. To put this in perspective, in fiscal year 2001, RC support to USTRANSCOM staff accounted for 28.2 man-years. However, with the increased OPTEMPO generated by the global war on terrorism, support increased to 114.1 man-years in fiscal year 2002, 96.2 man-years in fiscal year 2003, 95.4 man-years in fiscal year 2004, 94.8 man-years in fiscal year 2005 and 89.4 man-years projected in fiscal year 2006. USTRANSCOM will depend on volunteerism to meet requirements for the foreseeable future.

The President's executive order authorizing partial mobilization (up to 1 million reservists for up to 2 years) has proven crucial during OIF, OEF, and ONE. Although thousands of RC forces volunteered, USTRANSCOM and its components were required to mobilize thousands more. With the pending completion of involuntary mobilized tours of duty at the end of fiscal year 2006, the number of temporary duty days for the remaining intratheater airlift forces could increase as much as 33 percent. It is essential to maintain RC mobilization agility and flexibility as we respond to warfighter needs in the future.

Quality-of-Life Issues

With the Nation maintaining an extended war footing, quality-of-life programs can alleviate some stress experienced by our people. The movement of service members' personal property is one such quality-of-life issue. SDDC is developing the Families First Program, a comprehensive plan to significantly revamp DOD household goods movements, which began with its Phase I implementation in 2004. Phases II and III are currently under development. Selecting transportation service providers based primarily upon performance and customer surveys, and the inclusion of full replacement value for lost or damaged personal property transported at government expense, are paradigm shifts and significant quality-of-life enhancements.

It's imperative that as we demand so much, we watch out for our military family by providing proper manning and relieving unnecessary stress when and where possible. Projecting America's national military power depends on the heroic work of USTRANSCOM's people.

TRANSFORMATION: DISTRIBUTION TRANSFORMATION AND PROCESS IMPROVEMENT

Distribution Process Owner (DPO)

In its role as the DPO, USTRANSCOM's effort to improve deployment and distribution processes has yielded real results due in part to dedicated oversight. Within the DPO management structure, the DPO executive board is the senior decision-making forum charged with implementing DPO initiatives. With representation from the Director, DLA, Joint Staff (JS) logistics directorate (J4) and the Deputy Under Secretary of Defense for Logistics and Material Readiness, this forum ensures collaboration within the DOD and a single view of supply chain management challenges. To ensure the DPO executive board remains focused on COCOM and Service requirements, the Distribution Transformation Task Force (DTTF), with representation from each COCOM, Service, Office of the Secretary of Defense (OSD), DLA, and the Joint Staff, advises and works to solve near-term warfighter issues and refine COCOM support.

USTRANSCOM and USCENTCOM are eliminating seams between strategic and theater distribution using the USCENTCOM Deployment and Distribution Operations Center (CDDOC). The CDDOC enables USCENTCOM to improve operations and avoid costs through a collaborative national partnership with USTRANSCOM, USJFCOM, DLA, and the Services, providing increased visibility over deployment and distribution flow. The CDDOC improved readiness by intensively managing critical items, such as add-on-armor kits to fulfill critical needs, and by carefully managing unit moves with the Single Ticket Program by moving deploying troops to the fight and redeploying them home more quickly. Single Ticket accelerated force movements, increased troop airlift efficiency, and pushed passenger seat utilization above 94 percent.

Working with AMC and DLA, CDDOC has also championed the Pure Pallet Initiative. Individual 463L airlift pallets are built and shipped with cargo for a single customer, simplifying and accelerating the shipment process by removing the re-

quirement to break down, sort, re-palletize and distribute items to individual customers. In a similar but unrelated initiative, CDDOC has teamed with AMC to improve 463L pallet inventory tracking, reducing cycle time and making an additional 18,000 pallets available for use (a savings of $27.9 million). Also enacted with the Public Warehousing Corporation, is an inspection and repair procedure. Of 11,000 pallets inspected over 4,200 were returned to service, avoiding almost $1 million in depot repairs.

Similarly, in cooperation with SDDC, USTRANSCOM's global container manager, USTRANSCOM has made significant progress in container management. By teaming with USCENTCOM and industry, USTRANSCOM has reduced container storage needs with improved material management processes. The cost of storing cargo in containers has been reduced from a high of $16 million per month to less than $11 million. Long-term process and contract changes to enhance container use are underway and are migrating to other COCOMs, including improvements such as tagging containers for better visibility and leveraging commercial systems to enhance material management.

We have implemented a cost-management process that allowed us to capture savings and cost avoidances resulting from DPO-related improvements. From October 2004 through November 2005, USTRANSCOM avoided $345.12 million in extra costs by shifting transportation mode from airlift to sealift or from truck to rail, canceling redundant storage contracts after DLA built the new defense distribution center in Kuwait, changing the management and repair of 463L pallets, returning transportation equipment to the supply system, and upgrading a lower cost communications system/mode. Overall validated cost avoidances facilitated by the DPO were $638.42 million as of November 2005. The CDDOC was responsible for $50.58 million of these costs.

USTRANSCOM is taking CDDOC lessons learned and with the cooperation of the other COCOMs, applying them to other theaters, spearheading the standardization of a Joint Deployment and Distribution Operation Center (JDDOC). Each COCOM has established a permanent JDDOC, scaled for their region and assigned missions, and created by reorganizing existing theater structures to provide the authority and capability to synchronize deployment and distribution processes.

The USPACOM JDDOC (PDDOC) was quickly tested in synchronizing the massive influx of humanitarian aid into the tsunami-devastated parts of South Asia in December 2004. PDDOC has also established forward elements in Korea and Japan, PDDOC–K and PDDOC–J, respectively. These organizations have been observed and assessed during Exercises RSO&I/Foal Eagle, Ulchi Focus Lens, and Terminal Fury, demonstrating their worth and codifying their relationships.

USNORTHCOM's JDDOC (NDDOC) was also tested when Hurricane Katrina devastated the Gulf Coast. The NDDOC served as manager of deployment and distribution for USNORTHCOM and JTF-Katrina. NDDOC Sustainment Division's DLA representatives supported FEMA during relief operations with contracting support and the provision of supplies. Progress was made in establishing an effective process for sustainment flow between FEMA and Federal agencies, and promoting visibility of sustainment and retrograde material despite the lack of common in-transit visibility (ITV) tools and electronic data interchange (EDI) solutions.

USEUCOM's JDDOC (EDDOC) reached initial operational capability in May 2005, and has leveraged DPO advisory team visits in conjunction with Exercises Sharp Focus and Flexible Response. U.S. Southern Command's (USSOUTHCOM) JDDOC (SDDOC) has reached full operational capability, refining its operations through the multi-nation Exercise New Horizons.

In order to provide the best possible support to combatant commanders, Services, and agencies, USTRANSCOM is spearheading the development of deployment and distribution command and control (D2C2) concepts, procedures, and associated doctrine to enable the combatant commanders to manage theater logistics operations with more visibility, control, precision, and efficiency. USTRANSCOM's D2C2 assets will be trained to a common standard, possess common C2 information technology systems to ensure connectivity across the joint deployment and distribution enterprise, and will be able to reach back to the national partners to ensure the rapid deployment and distribution of forces and materiel. In addition to the JDDOC functional elements like Joint Task Force-Port Opening (JTF–PO) and the Director Mobility Forces-Surface (DM4–S) have been created to support deployment and distribution activities. A JTF–PO, established from USTRANSCOM aligned forces and deployed to regional combatant commanders, is capable of quickly opening and operating ports in specific theater locations. These forces will chop to the supported COCOM and will operate until being replaced. The DM4–S will synchronize and direct the movement of surface transportation resources to ensure uninterrupted

throughput at ports of debarkation (air and sea) to the theater as prescribed by the Combined/Joint Force Land Component Commander.

USTRANSCOM is also active in defining future warfighting concepts and needs and has partnered with the Army to develop a joint integrating concept (JIC) for distribution. Ultimately, this JIC will drive the creation of a Joint Deployment Distribution Enterprise with the wherewithal to ensure effective force movement and sustainment support to the warfighter.

Forces to be deployed must be quickly and effectively sourced. In 2005, USTRANSCOM was assigned the role as the single DOD Mobility Joint Force Provider in order to maintain visibility of global transportation capabilities and synchronize the availability of scarce mobility forces. In this role, USTRANSCOM is responsible for the efficient, rapid, worldwide availability of mobility forces in support of national security priorities.

Similarly, and to solidify USTRANSCOM's role as the DPO, it was essential to amend the wording in the Unified Command Plan (UCP), language we expect to be approved by the Secretary of Defense and the President. We have recommended the UCP embody the mandate to employ our core competencies, to coordinate and supervise the DOD distribution system to provide interoperability, synchronization, and alignment of DOD wide, end-to-end distribution.

USTRANSCOM is using a recently established research and development (R&D) funding line to partner with the Services, defense agencies, other non-DOD government organizations, industry, and academic communities to improve our force projection and distribution capabilities. This R&D line enables us to leverage future technologies to address intermodal inefficiencies and transform our processes. USTRANSCOM is seeking limited Research Development Test and Evaluation (RDT&E) budget, and acquisition authority to pursue intermodal distribution needs which are not addressed by existing R&D activities. Our proposal leaves traditional organize, train, and equip responsibilities with the Services, but aligns responsibility with authority by providing an assigned RDT&E mission, receipt of a modest RDT&E budget line, and codifying RDT&E acquisition authority.

In order to ensure our initiatives are producing results for the warfighter, USTRANSCOM evaluates the distribution enterprise's institutional health through simple but comprehensive metric analysis. Distribution analysis measures the effectiveness of moving personnel and material to meet the warfighters' needs based on their requirements; the quantities ordered and delivered on the date specified. Examples of the analysis products include intermodal distribution, requisition wait time, and add-on armor reports. Intermodal distribution reports pertain to each COCOM's intermodal distribution lane (point of supply to point of use), and measure the lane's performance to determine lane effectiveness. Requisition wait time reports pertain to the Defense Distribution Depot Kuwait, Southwest Asia (DDKS) and the Theater Distribution Center (TDC). These reports flagged the need to reduce the average wait time from the DDKS and TDC from 22 days in March 2005 to a current 12.2 days and we are nearing the goal of 9 days. Finally, the add-on armor reports provide a daily snapshot of the armor kits leaving the contractor facility and arriving at Charleston AFB, Incirlik AB and Balad aerial ports. These reports support better modal transportation decisions while improving user confidence in USTRANSCOM distribution processes.

In addition to improving the distribution process within the DPO framework, USTRANSCOM continues to engage in the Defense Business Systems Management Committee that oversees the development of world-class business operations in support of the warfighter. In particular, we're moving out as the distribution portfolio manager to streamline distribution systems to ensure effective use of information technology (IT) resources and to reduce duplicative system overlap and fill gaps in the Joint Deployment and Distribution Architecture (JDDA).

One example of a cross-department improvement of business architecture is the Defense Enterprise Accounting and Management System (DEAMS), a joint initiative between USTRANSCOM, the Air Force, and the Defense Finance and Accounting Service. The overall objective of DEAMS is to implement a single integrated finance system to provide reliable, accurate, and timely information, which will service our Army, Air Force, and Navy components' working capital fund financial needs. It will also combine Transportation Working Capital Fund multiple legacy billing systems into a single billing module. Upon completion of the system integrator selection, the integration process is expected to begin by the second quarter of calendar year 2006.

USTRANSCOM also looks to the commercial sector for transformational efficiencies. The Defense Transportation Coordination Initiative (DTCI) is a distribution initiative that contributes to logistics transformation and the Under Secretary of Defense for Acquisition, Technology, and Logistics' goal to integrate logistics. The DTCI concept will use a commercial transportation coordinator to integrate and syn-

chronize the movement of DOD freight in the CONUS, improving effectiveness and efficiency of materiel movement. USTRANSCOM, in partnership with DLA, is leading the effort, and will award the contract in September 2006. Transition will commence beginning in October 2006 with actual phase in the first DOD site in January 2007.

Defense Courier Service Returns to USTRANSCOM

Another cross-department initiative is the return of the Defense Courier Service (DCS) to USTRANSCOM. This move began when Program Budget Decision (PBD) 410, dated 5 December 2003, directed the realignment. On 15 November 2005, the Defense Courier Division under USTRANSCOM Directorate of Operations (J3) assumed operational control of worldwide defense courier stations and continues to synchronize defense courier related activities for our global customers.

USTRANSCOM Sustainment, Force Flow Conferences

Collaboration is a must for USTRANSCOM success. In 2005, we continued implementation of Adaptive Planning and Collaborative Force Analysis, Sustainment, and Transportation Force Flow Modeling, by supporting nine Combatant Commander Operational/Concept Plan Force Flow Conferences for USEUCOM, USNORTHCOM, USPACOM, and U.S. Strategic Command (USSTRATCOM) as well as functional planning for USSOUTHCOM. Additionally, USTRANSCOM hosts biannual USCENTCOM-chaired force flow conferences to forecast force deployments, redeployments, and rotations in support of OEF/OIF operations. This collaborative effort allows the COCOM to shape the flow of forces to reflect operational requirements.

This process has been further enhanced with the addition of a sustainment conference. Held in parallel for the first time in the fall of 2005, this Force Flow/Sustainment conference provides visibility of sustainment requirements providing a clearer picture of COCOM needs and enabling the two commands to prioritize movements during surge periods.

USTRANSCOM'S READINESS AND MODERNIZATION

Antiterrorism and Force Protection

USTRANSCOM ability to accomplish its global mission rests on our ability to protect our personnel and assets. We are improving force protection through intelligence information sharing, physical countermeasures, and employee screening, partnering with COCOMs, our components, the Department of Homeland Security (DHS) and commercial industry. To better share information, SDDC is sponsoring surface secure classified communication efforts to integrate the Association of American Railroads (AAR) by late calendar year 2006. In addition, SDDC has explored similar capability discussions with the American Trucking Associations (ATA) to facilitate ATA gaining secure connectivity with SDC.

As an interim solution, SDDC provides classified intelligence exchanges via Transportation Security Operations Center secure systems accessible by ATA and AAR representatives, and hosts weekly intelligence sharing sessions and secure telephone connectivity with maritime commercial partners. Protecting our military and commercial seaports will continue to be a serious challenge. USTRANSCOM and SDDC have continued to secure funding to further improve infrastructure security at the Military Ocean Terminal Sunny Point (MOTSU), North Carolina and the Military Ocean Terminal Concord (MOTCO), California. In 2005, waterside protective barriers at MOTSU were completed and $789,000 was invested for two new physical security improvements. As we upgrade and better fortify these installations from terrorism or natural disaster, the difficulty ahead lies in providing an adequate level of security force manning with sustained funding to support base operations and protect our vital national arms, ammunition, and explosives (AA&E) transshipment ports.

In 2005, SDDC mobilized a small compliment of the remaining Army Reserve military police (MP) elements to augment SDDC civilian ports security. However, their departure and lack of backfill requires USTRANSCOM to seek alternatives such as contracting security personnel drawn from local sheriff/police departments during surge periods. However, availability of these security forces will be at risk during a local crisis, which makes this solution less than optimal. During a localized state crisis involving a strategic DOD seaport of embarkation, DOD may need to depend on augmentation under state control until military augmentation would be available.

Controlling access to restricted transshipment areas is also essential to providing comprehensive force protection. USTRANSCOM and SDDC are working with OSD, the Transportation Security Administration (TSA), ATA, and several AA&E carriers

to develop an appropriate DOD identification card, mandated by the Maritime Security Act.

USTRANSCOM also continues to upgrade the access, control, and vetting of the transportation workforce that loads, unloads, and mans its strategic sealift fleet. MSC has standardized its ship visitor badge system, distributed new badges to its entire fleet and hired a new screener at the El Paso Intelligence Center.

Operation Vigilant Mariner (OVM) continues to protect our sealift assets following the Secretary of Defense's designation of the Navy as executive agent for force protection of military sealift assets. Leading the way is the Maritime Force Protection Command (MARFPCOM), activated on 1 October 2004. Working in close coordination with MSC, MARFPCOM continues to provide point defense for sealift assets supporting contingency operations, using Active-Duty personnel and 54 Reserve component teams ready to deploy.

To protect its aircraft and aircrews from rapidly advancing and highly-proliferated infrared (IR) manportable air defense systems (MANPADS), AMC continues to field the Large Aircraft Infrared Countermeasures (LAIRCM) system, an extremely capable system that has successfully flown in combat on C–17s and C–130s. Likewise, AMC has established a requirement for a new capability called Advanced Situational Awareness and Countermeasures (ASACM), which will provide detection, identification, and location of radio frequency (RF) threats, increasing aircrews' survivability in an RF threat environment.

Currently, AMC has no technical capability other than accepting cargo from "known and trusted" sources and performing random physical searches with canines to meet the need to non-intrusively inspect cargo prior to air transport, a method which leaves aircraft and passengers at risk. USTRANSCOM supported the "explosive screening" initiative by providing the majority of funding thus far and AMC plans to fund 172 commercial off-the-shelf (COTS) Fido™ hand held systems in their fiscal year 2008–fiscal year 2013 POM. Fido™ is a vapor and particle explosive detection device currently optimized to detect TNT and DNT explosive materials, and black and smokeless powders and can screen cargo prior to pallet build-up, rolling stock, and other types of cargo entering into the DTS.

USTRANSCOM's Critical Infrastructure Program (CIP) made excellent progress this past year, initiating information sharing with numerous DOD and interagency organizations such as the Department of Transportation and DHS. Those CIP actions support and are supported by our participation in the National Port Readiness Network, chaired by the MARAD, chartered to ensure seaport readiness to support military deployment, sustainment, and redeployment while minimizing commercial traffic disruption.

With DOD's increasing role in combating the global proliferation of weapons of mass destruction and for providing relief in potentially hostile environments, USTRANSCOM's ability to detect, decontaminate, and operate in a CBRNE and/or toxic industrial material environment will continue to require attention and funding for the foreseeable future. We are making great strides in the areas of individual protective equipment, throughput capability, and technological improvements, but there is more work ahead in the areas of detection, decontamination, and policy development, with emphasis on a comprehensive DOD cleanliness policy.

USTRANSCOM has embarked on meaningful intelligence reforms under the aegis of the DOD's remodeling defense intelligence (RDI) initiative, a Secretary of Defense effort to operationalize intelligence, improving the capacity to anticipate threats and warn of impending actions, and strengthening the COCOM's ability to conduct intelligence activities, through joint intelligence operations centers (JIOC).

The Joint Intelligence Operations Center—Transportation (JIOCTRANS) will position USTRANSCOM to engage other JIOCs early in the planning process, to identify and prioritize requirements and codify our responsibilities to synchronize transportation intelligence across the far-flung, collaborative defense intelligence enterprise. Additionally, the Defense Intelligence Agency's (DIA) regional support center concept, in which DIA assumes the role of intelligence community IT service provider, will result in a consolidation of sensitive compartmented information (SCI) IT services and a reduction in intelligence IT billets.

Another major pillar of RDI is the Defense Intelligence Analysis Program (DIAP). DIAP represents a major departure from past intelligence constructs as it emphasizes analysis over production, and in so doing will allow JIOCTRANS to move beyond transportation infrastructure analysis to analysis of transportation as a system of systems in support of COCOM planning and execution missions.

Additionally, USTRANSCOM has created initiatives to enhance information-sharing between USTRANSCOM, its components, and selected coalition and commercial partners. The Intelligence Directorate has established the DTS Info-Share program as an unclassified internet-based system for sharing threat warning, incident, and

trend reporting. USTRANSCOM conducts quarterly modal threat meetings between the DHS and transportation agencies for review of threats to and mitigation efforts for transportation nodes. The effort's end-state requires continued USTRANSCOM pursuit of new partnerships with DOD and non-DOD organizations, particularly DHS and TSA.

Accelerated Deployment Planning & Improved Total Asset/In-Transit Visibility

USTRANSCOM remains committed to accelerating the planning of deployments and upgrading in-transit visibility (ITV) at all points of the deployment and distribution pipeline. An important initiative, Focus Warfighter, was born out of our advanced concept technology demonstration, Agile Transportation for the 21st century (AT21). The USTRANSCOM DDOC reorganized, reorienting its processes to collaboratively plan with the COCOMs. The goal is to create a comprehensive plan that aligns and provides longer windows of visibility on various requirements such as exercises, troop rotations, deployment, sustainment, and redeployment and eventually gives regional commanders validation authority on missions like Special Assignment Airlift Missions (SAAMS) that currently are not in the COCOMs' purview. With awareness of all requirements we expect to be able to plan "normal operations" more efficiently and adjust more rapidly to crisis situations.

AT21 also showed us COTS products can enhance and support our overall transportation planning and movement processes with the potential for significant savings. One such tool is Transportation Visualizer (TransViz), a visualization and collaboration tool used for strategic transportation planning. TransViz will revolutionize the way we analyze transportation movement information, share thoughts, evaluate courses of action, and make informed, effective and timely decisions. We expect TransViz to be operational at USTRANSCOM by March 2006.

The Global Transportation Network (GTN) integrates transportation information from over 23 DOD and 125 commercial source systems supporting USTRANSCOM's global mission. With the discontinuation of GTN for the 21st century (GTN 21), we are partnering with DLA and JS J4 to best meet our customers' ITV needs. Currently, we are bringing two similar systems, GTN and DLA's Integrated Data Environment, together under the same acquisition management framework.

We have also implemented active Radio-Frequency Identification (RFID) technology at our major strategic air and sea ports to provide COCOMs detailed cargo movement tracking information. In addition, USTRANSCOM is partnering with DLA, Air Force, Army, and USPACOM to implement the Alaska, Active-Passive, Inter-modal Deployment (RAPID) project. RAPID will support an inter-modal, RFID-enabled supply chain that will integrate passive and active RFID data and improve asset visibility. The RAPID project will support shipments originating from the San Joaquin depot passing through distribution nodes on the west coast and in Alaska with Fort Richardson and Elmendorf Air Force Base as the end-users.

USTRANSCOM recognizes the nature of our mission creates a need for more robust bandwidth resources and end-to-end connectivity with transportation elements and supported forces deployed throughout the world. As such, we fully support ongoing DOD programmatic efforts to expand terrestrial Global Information Grid enterprise bandwidth, and launch robust communications and blue-force asset tracking satellite constellations.

USTRANSCOM is striving to achieve a common operating picture across the entire distribution operations continuum, from commodity source to point-of-effect. This emergent view via fused C2 information technology systems will be called the Warfighter's Distribution Dashboard. This "dashboard" will provide a three-dimensional environment that integrates deployment and distribution visualization and analysis tools with a wide array of available USTRANSCOM data feeds as layers within a geospatial environment, capturing the entire distribution battlespace in a single web-based location to facilitate rapid analysis and visualization of links, nodes, and lanes by all stakeholders. Ideally, the dashboard will exist within an operations center platform thus improving DDOC effectiveness and efficiency.

Ongoing Studies

In view of September 11 changes to our national military strategy and current operational experiences, defense strategy objectives have significantly changed. Accordingly, the JS J4 and OSD Program, Analysis, and Evaluation (PA&E) Directorate conducted the mobility capability study (MCS) which provides a starting point for analysis of pre-positioning, aerial refueling, airlift, sealift, surface deployment, and distribution capability required to support global COCOMs in 2012. USTRANSCOM supports JS and OSD efforts and agrees with the MCS assessment that the overall lift capability is about right, however, additional analysis must focus on the correct mix of C–17s, C–5s, and C–130 assets and aerial refueling and

sealift recapitalization. As such, we initiated an internal focused mobility analysis to study strategic mobility from a USTRANSCOM perspective, concentrating on the strategic airlift mix of C–17s and C–5s, and sealift recapitalization alternatives. MCS will be our baseline, but we will explore how changes in key assumptions may impact the analytical outcome. We will also support the Intra Theater Lift Capability Study (ITLCS) Phases 1 and 2 to identify the right mix and number of intra-theater aircraft assets.

Air Mobility Readiness and Modernization

Aerial refueling capability is an absolute necessity, as it makes possible rapid deployment of forces around the globe, and measured recapitalization of the tanker fleet is my highest acquisition priority. We envision the Replacement Tanker Aircraft (RTA) with a multi-mission capability. Configured with cargo floors/doors, and defensive systems, the RTA fleet will provide significant capability, complementing our inter/intra theater airlift fleets, as well as Civil Reserve Air Fleet (CRAF) transload operations, and aeromedical evacuation (AE) in a threat environment, something our current legacy fleets cannot do.

At the anticipated procurement rate of 10–15 aircraft per year, recapitalization of the current 530 aircraft will take decades. With aggressive maintenance and corrosion control, the KC–135 can remain structurally viable until about 2040, but at an ever-increasing cost and with the realization that they will be 80 years old as the last replacement enters service.

Though the KC–10 also appears viable until the 2040 timeframe, it must be modified to ensure the 59 KC–10s can operate in the future global airspace environment. AMC initiated a KC–10 aircraft modernization program to comply with international airspace requirements, address obsolescence concerns, and provide a growth path for future upgrades.

USTRANSCOM needs the outsized and oversized capability provided by the fleet of 292 strategic airlift aircraft and relies on its viability to meet the airlift demands of our national defense strategy. As such, we must continue the moderate risk program of modernizing C–5s to improve reliability, availability, and access to international airspace and foreign airfields.

We are also rapidly approaching a major milestone on C–17 production, as long-lead items near completion for the 180th aircraft. We continue to rely heavily on our delivered C–17s, currently flying these aircraft well above their planned annual flying hour profile. Results of C–5 modernization coupled with aging C–130s, will have a direct impact on C–17 roles as both an inter- and intra-theater airlifter, and the amount of capacity it will shoulder compared to other aircraft in the airlift mix.

The aging C–130 fleet faces obsolete parts, costly repairs, noncompliance with Air Traffic Management requirements, but most pressing in the active component are the number of center wing box cracks and associated unprogrammed repair costs. Eighty-two C–130 aircraft Air Force-wide are currently grounded or restricted, and this combined with ARC demobilization of ARC C–130E/H personnel in 2006, places a distinct burden upon the Active-Duty fleet. The planned acquisition of 168 C–130Js to replace the C–130Es, was limited by PBD–753 to 53 aircraft. Although rescinded in May 2005, funding to reach 79 C–130Js has only recently been restored. The retirement of C–130Es, if permitted by law, reduced C–130J procurement, and restricted and grounded aircraft would push the C–130 fleet below the MCS lower bound requirement of 395 combat delivery platforms required to meet the defense strategy as early as fiscal year 2007.

Overall AE requirements have stabilized over the past year and are not expected to decrease for the foreseeable future. Active-Duty AE forces are filling a significant portion of deployed requirements; however, ARC assets are still required in both a volunteer and partial mobilization status. While the Air Force Surgeon General and Air Force Director of Operations are reviewing the force mix for AE, the majority of assets are expected to continue to reside in the Reserve component.

Sufficient material handling equipment (MHE), both in capability and quantity is key to providing an effective cargo handling infrastructure required to conduct rapid mobility operations. The Air Force is modernizing its MHE fleet, procuring 318 Tunners and funding production of 385 of 512 required Halvorsen loaders through fiscal year 2007. USTRANSCOM encourages the Air Force to continue acquisition and fielding of the remaining 153 Halvorsen loaders.

Sealift Readiness and Modernization

MSC and the MARAD surge fleets, maintained in the highest state of readiness provide critically essential lift capability for operations that our commercial partners cannot handle alone. These fleets, comprised of 8 Fast Sealift Ships (FSSs), 11 Large Medium-Speed Roll-On/Roll-Off (LMSR) ships, and 58 Ready Reserve Force

(RRF) ships, average 33 years of age for an FSS and 35 years of age for an RRF ship, compared to the typical 15 to 20 year average economic life of a commercial vessel. It is imperative for USTRANSCOM, MSC, and our sealift partners to complete our analysis of recapitalization alternatives, as key elements of the fleets are nearing the end of their useful lives and will require recapitalization to meet future requirements.

The age of MSC's tanker fleet is also a concern, as international regulations and commercial refinery standards limit the age of tankers loading and discharging at most worldwide oil terminals to a maximum of 25 years. MSC's controlled fleet of four fuel tankers will pass their useful age in 2010. In preparation, we are pursuing the long-term charter of newer commercial tankers to transport DOD fuel. As a vast majority of U.S.-flagged tankers are active in Jones Act trade, the desire for additional international trade tankers for DOD cargo may result in opportunities for new tanker construction in U.S. shipyards.

As the DPO, USTRANSCOM maintains the requirement to provide heavy lift and float-on/float-off (FLO/FLO) capabilities. The lack of U.S.-flagged FLO/FLO assets negatively impacts the ability to provide transport of vessels such as U.S. Coast Guard (USCG) patrol boats and U.S. Navy (USN) minesweepers that may not otherwise be capable of open ocean transit—due either to size or capability.

The Offshore Petroleum Discharge System (OPDS) supports COCOM requirements by distributing fuel from a tanker offshore to forces operating on land. Only three Government-owned OPDSs exist, two deployed as part of MSC's Afloat Prepositioning Force, and one lay berthed in CONUS. Each of these ships is a single-hulled tanker over 40 years old. USPACOM's validated requirement for delivery of 50 percent more fuel (1.7 million gallons) from 8 miles offshore under significantly more stringent environmental conditions has driven USTRANSCOM and MSC to initiate an OPDS transformation project to meet the new requirement. In January 2005, MSC awarded a contract to Edison Chouest Offshore for an OPDS replacement, including newer, more capable vessels, fuel-delivery systems, and personnel, to be delivered by June 2007.

Infrastructure Readiness and Modernization

Beginning in the late 1990s, USTRANSCOM, USEUCOM, USCENTCOM, USPACOM, the JS, DLA, and the Services developed and implemented a comprehensive plan to improve strategic airlift. Over $1.2 billion in programmed construction projects to upgrade fuel hydrant systems, fuel storage, ramps, and runways at 13 key en route airbases in Europe and the Pacific were approved. Major construction began several years ago and will continue until achieving full operational capability by the end of fiscal year 2008, if funding remains on track. Once completed, this programmed en route infrastructure system will support wartime throughput requirements as validated by Mobility Requirements Study 2005 (MRS–05) and MCS into Northeast and Southwest Asia.

We have been working closely with OSD, the JS, and the COCOMs over the past 3 years to expand our global reach and influence into regions of potential instability, primarily in the Southern Hemisphere and Southeast Asia. As part of the Integrated Global Presence and Basing Strategy, civil and military airfields and seaports, known as cooperative security locations (CSLs), are being nominated and assessed for their ability to permit transshipment between air, sea, and surface modes of transport.

USTRANSCOM in partnership with the COCOMs is identifying and assessing CSLs that can support a notional airlift flow of 1,500 short tons per day, as well as provide the capability to flow forces and sustainment seamlessly between neighboring COCOMs. Chosen CSLs will be integrated into the established strategic en route network in Europe and the Pacific to provide the vital link between CONUS and more remote corners of the world, enabling DOD to more effectively support the warfighter.

Commercial Industry and Labor Teammates: Achieving the Right Mix of Commercial and Organic Capability

USTRANSCOM readiness depends on maintaining a superb relationship with our commercial transportation partners and supporting labor organizations, allowing DOD to leverage significant capacity of commercial transportation in wartime with reduced peacetime cost. Under full activation, the CRAF provides 93 percent of our international passenger capacity, 39 percent of our international long-range air cargo capacity, and most of our international AE capability. The CRAF program affords peacetime business to participating airlines in exchange for their providing specified capacities in wartime, and as such participants deserve safeguards like the Federal Aviation Administration's Aviation War Risk Insurance to protect from loss

or damage to capital investments incurred supporting DOD operations in accordance with the National Airlift Policy.

The CRAF program relies upon a robust civil air industry therefore, we support the Fly America statute (49 U.S.C. 40118) and what we refer to as the Fly CRAF statute (49 U.S.C. 41106) as they serve to support and sustain this critical national asset. We continually review the program and its incentives, adjusting to keep the program viable in a dynamic environment.

We have recently studied CRAF incentives and have submitted legislation intended to guarantee that a proper amount of "assured business" will be available in the future. Other forthcoming improvements include the restructuring of CRAF stages, aligning them more closely with expected wartime needs. Within the CRAF program we desire a U.S.-flagged commercial airline capability to carry outsize cargo and a new aeromedical evacuation ship set, able to convert several types of commercial aircraft for the AE mission, to improve operational flexibility and responsiveness.

The Voluntary Intermodal Sealift Agreement (VISA) is the maritime equivalent of the CRAF program. In cooperation with USTRANSCOM, MARAD and the maritime industry developed VISA to provide DOD the commercial sealift and intermodal shipping services/systems necessary to meet national defense contingency requirements. USTRANSCOM and MARAD co-chair the Joint Planning and Advisory Group (JPAG). At JPAG meetings, ocean carriers participate in the planning process to assure that commercial sealift capacity will be available to support DOD contingency requirements. Under VISA, DOD has access to commercial, dry cargo, U.S,-flagged sealift capacity and intermodal infrastructure in return for peacetime business preference. Because pre-negotiated contracts with the carriers permit early access to additional lift capacity, the time required to close forces for the counterattack phase of war operations can be significantly shortened. VISA participants move over 95 percent of USTRANSCOM's global war on terrorism wartime sustainment cargo.

The Maritime Security Program (MSP) provides financial assistance to offset the increased costs associated with operating a U.S.-flagged vessel. In return, participating carriers commit vessel capacity and their intermodal transportation resources for DOD use in the event of contingencies. A critical element of our commercial sealift program, MSP provides assured access to sealift/intermodal capacity and a readily available, highly-trained and qualified workforce of merchant mariners. The National Defense Authorization Act for Fiscal Year 2004, authorizing the expansion of the current MSP fleet from 47 to 60 vessels, including 3 fuel tankers, went into effect 1 October 2005. MARAD is responsible for administering MSP to assure program compliance. This expansion is particularly critical should the U.S. find itself in a position where it must act with minimal allied support during time of war or national emergency. Additionally, the increase in the fleet size has had a direct, positive impact on the number of billets and mariners. Of the 13 new vessel participants, 11 were previously foreign-flagged and since re-flagged to U.S. colors. As participants in the MSP, these newly re-flagged vessels will have U.S. crews and provide a solid job base for the American Mariner.

Advanced Lift Systems and Concepts of Tomorrow

To properly support the combatant commander requirements in the future, the need for more responsive and flexible lift cannot be overemphasized. New mobility platforms as well as enhanced infrastructure technologies and process/organizational improvements are essential to meet the challenge of transporting greater volumes more quickly to distant theaters at yet greater distances. There are several initiatives now under consideration to facilitate these goals.

The potential lack of availability of aerial ports and sea ports of debarkation overseas has generated an exploration into seabasing, based on the rapid deployment, assembly, command, projection, reconstitution, and re-employment of joint combat power from the sea. In September 2005, a seabasing joint integrating concept was validated by the Joint Requirements Oversight Council, which recognized that seabasing improves power projection without access to secure foreign bases and the littoral regions.

As the joint sea base evolves, the development of sea state mitigation capability (through sea state four), high speed connectors such as 40-knot plus vessels to transport personnel and equipment, high speed inter-theater sealift vessels from CONUS to the sea base, and the ability to utilize capabilities of both military and commercial cargo and fuel ships will be vital to sustain forces with little host nation support.

With our military operations being conducted more and more in austere locations around the globe, coupled with new DOD and joint maneuver concepts, we find it increasingly important to develop a short take-off and landing (STOL) airlift capa-

bility. Current aircraft like the C–130 and C–17 do not provide the access we will need from future land and sea based operations. USTRANSCOM envisions new capabilities that can lift over 60,000 pounds to or from shorter, unprepared landing zones while providing improved survivability, speed, and range. These capabilities will enhance our operational flexibility and our reaction time to world crises.

In addition, as with the development of STOL technology, USTRANSCOM envisions a future with a mobility airframe that serves as a common platform or a family of platforms adaptable for multiple uses. This approach enables a more affordable acquisition, enabling specialization of a core design during assembly, as opposed to wholly separate airframes and production lines for each mission. This can be a cost-effective way to meet our future aircraft replacement requirements.

In light of all these technological challenges, AMC is currently assessing their combined feasibility with the Advanced Mobility Capability Concept (AMC–X). AMC–X is a capabilities-based future "family of aircraft" concept designed to provide swift, dominant, and survivable intra-theater maneuver for all joint customers in the post 2020 timeframe. Variants of the AMC–X family have the potential to perform a variety of missions to meet the needs of multiple users and COCOMs. USTRANSCOM supports AMC in these efforts.

Army transformation has changed doctrinal concepts from arraying forces in large contiguous formations to one of smaller dispersed operations in austere locations over greater tactical and operational distances. As such, the Army forecasted a need for a limited, time-sensitive organic light airlift capability in the form of a Future Cargo Aircraft (FCA) to support dispersed operations as their current fixed and rotary wing assets lack the speed, range, and payload capability to meet emerging requirements. Air Force platforms generally lack the necessary STOL capability. USTRANSCOM recognizes the Army requirement to support mission critical, time sensitive delivery directly to a brigade combat team and supports the current Army Sherpa replacement program, known as the FCA as currently programmed. USTRANSCOM is also coordinating with AMC on executing a capability based assessment that would define requirements for a Light Cargo Aircraft (LCA) to provide an intra-theater light airlift sustainment, as well as support to homeland security mobility operations capability, as part of the future force. In today's fiscally constrained joint environment, USTRANSCOM fully supports the Department's direction to field this new Army and Air Force capability as a joint program. The new FCA/LCA should definitely address evolving airlift requirements, future force design and be capable of employing advanced precision airdrop systems such as the Joint Precision Airdrop System (JPADS).

USTRANSCOM recognizes military operations are being conducted in austere locations around the world and as such envisions the need for a precise direct delivery capability via airdrop. The JPADS is key to the resupply and sustainment of forces pursuing the adversary and engaged in combat.

USTRANSCOM is also engaged with U.S. Army leadership to help facilitate transportability of the Future Combat System of Systems (FCS) and the brigade combat team: two essential ingredients to the Army's new, transformational dominant maneuver strategy. We fully support the development of these new, highly robust, lethal, and more survivable combat vehicles and will work with both the Army and Air Force to maximize transportability. The FCS Manned Ground Vehicle (MGV) is the largest vehicle in the FCS family. We anticipate theater airlift of the FCS MGV will be provided by AMC C–130s (one MGV) and C–17s (up to three MGVs). USTRANSCOM remains committed to supporting and refining the transportability and employment of the Army FCS.

FINAL THOUGHTS FROM GENERAL SCHWARTZ

We are a nation at war and supporting the warfighter is USTRANSCOM's number one priority. We have been entrusted with the authority to lead and to transform and assigned the responsibility to serve the combatant commanders who will win this war. To that end, USTRANSCOM brings to bear a military deployment and distribution system that is unmatched anywhere in the world. USTRANSCOM's success begins with our people who with superb dedication, vision, and hard work continue to improve our support to the combatant commanders. Our people are the heroes who "make it happen and get it done."

The enemy and battlespace environment are constantly evolving. We're changing the way we do business, not because we can, but because we must to be as adaptive and agile as we've ever been, at any time in our history. We are operating in a distributed battle space, not against a state enemy over established borders. We are challenged to be expeditionary, to anticipate the needs of our agile, highly mobile, rapidly deployable warfighters.

Our Nation also demands that we rethink what we're doing, change mindsets, perspectives, the mix of assets, whatever it takes. The Nation's treasure is more precious than ever and gaining the trust and confidence of the Nation means being good stewards with all that is entrusted to us.

USTRANSCOM's DPO initiatives are paying substantial dividends now in effective support to the warfighter and in efficient use of our national resources. Our readiness and modernization initiatives will ensure the combatant commander's ability to swiftly engage and defeat America's enemies. USTRANSCOM will continue to look to the future and advocate systems to move America's might at greater distances and speeds.

I could not be prouder of the USTRANSCOM team and our national partners. Today, we are supporting the global war on terrorism, while providing unparalleled humanitarian relief in both America and nations abroad. Together we are transforming the military deployment and distribution system, ensuring our Nation's ability to project national military power—to ensure that America will face its enemies—whenever and wherever the need may arise. In all of this, a promise given by us will be a promise kept.

Senator TALENT. General McNabb.

STATEMENT OF GEN. DUNCAN J. MCNABB, USAF, COMMANDER, AIR MOBILITY COMMAND

General MCNABB. Yes. Mr. Chairman, again, it's great to be here on behalf of the AMC and to represent them to this subcommittee and to you. We are the air component to General Schwartz, who is both my friend and my boss, and I would tell you we represent the 144,000 folks of the AMC, and that's Active-Duty, Guard, Reserve, and civilians. The AMC is very proud of providing global reach for America, and what it gives us is the strategic ability to move, and that strategic ability to move is one that I think is a true cornerstone of our national defense. I would say we provide the airlift and air refueling to take our warfighters to the fight, whether that's Operation Enduring Freedom (OEF) or Operation Iraqi Freedom (OIF). That's not only getting them to the fight, but sustaining them when they are there, providing disaster relief at home and abroad, like Hurricanes Katrina or Rita, or overseas, like tsunami relief or the recent Pakistan earthquake.

Again, what General Schwartz mentioned is the aeromedical evacuation of our wounded to get them back to the best care available. It is probably one that both of us are about the proudest we could be of that system in working together with our great medical teams to figure out how we can take care of these great warriors. To give you an idea, today we flew 887 sorties. We do that pretty much day in and day out. That averages out to about every 90 seconds to 2 minutes, we have an airplane landing or taking off around the world in different places. As you mentioned, as General Schwartz and I watch this, General Schwartz always seems to know the one that doesn't go that well. So, I would just say that as we watch that, we try to make sure that is done as safely as possible. They are, in fact, airplanes that are showing the American flag around the world. I would say that wherever that flag lands, it not only represents America, it is America to the people that we help around the world. Our airplanes are controlled and sequenced out of Scott Air Force Base, our Tanker Airlift Control Center. I would say that the way we do that is it's prioritized by General Schwartz as he works with the combatant commanders (COCOMs) that we serve, and they will sequence this, and we will control that from Scott. That portion is one that we truly are proud

of because they will make sure that, as those airplanes go around the world, we are watching the threat, we are watching the weather, we are making sure that they are safe—all the kinds of things that you need to do to make sure that we can be nimble and quick when we have to change priorities, such as after a Pakistan earthquake or when there is a tsunami relief where we need to pick off airplanes very quickly to respond. Our enroute system is also one that we are very proud of because we can expand it and contract it very quickly so that when you think about our system, it is truly end-to-end. So, when you think about Katrina, the ability to send a contingency response group into New Orleans Airport to begin opening up that airfield to receive airplanes and get them on their way, it truly is awesome. Something that General Schwartz will talk about is extending that to a joint opening capability, but it's something that we do today that we are very proud of. You saw the same thing in Pakistan or anywhere else is where we look at that portion of it to make sure that that works.

Senator TALENT. It seems to me that that mission is increasing—that is, a worldwide relief mission. Have you noticed that? Would you describe it as a significant burden for you?

General MCNABB. Sir, what I would say is that we are getting better and better at it as looking at end-to-end so that as soon as you say go, we'll figure out how—what kind of bridge do you need to build to wherever we need to go to include maybe opening up airfields that say you know, we are going to go into this airfield, so what do we need to expand that airfield's capability for the system—sort of the throughput, if you will. That is being demanded faster. So, what we have done is we have created a system in which we are very responsive, that when the balloon goes up, we can very quickly expand the bridge overseas and carry that out. When we think about the expeditionary nature of our force, I would say that is one of the things that we are very proud of. Folks don't often realize that it's that portion that is more important than any other part because it allows you to build the structure so that you can fall in and keep this airlift and air refueling moving. Again, it gives General Schwartz and the combatant commanders a lot of flexibility to figure out where we need to go and how quickly we can go there. The other one that I would mention, that I think is very indicative today, is because of the war, we have the most battle-tested force we have ever had. So, what you get right now is lessons learned, and we look at things end-to-end, and we are able to focus on them and take that to the next level.

General Schwartz, as not only the commander of USTRANSCOM, but also the distribution process owner, allows us to look across the joint side of that whole equation to make sure that we are getting that right. So, sir, I am very proud of our AMC and the warriors that I get the pleasure of leading and representing today. I look forward to your questions, and I would like to say one other thing is that we are very grateful that, despite the loss of a C–5 yesterday, everybody walked away from that alive. There was no loss of life. It does speak volumes about the ruggedness of our equipment and the training that goes into our crews to egress safely and also allow the standards that this committee and others have really pressed for in our aviation industry because the

fact that that airplane didn't catch fire absolutely saved lives. Yesterday morning, when the airplane first went down I was very worried that we had lost lives. But as the day progressed and I kept getting information I was just amazed that the words came back that we have now accounted for everybody, and then it was everybody without life-threatening injuries. There were none. Last night, they had three folks that went through surgery—all successful. Again, it speaks volumes of our ability to do emergency response—bring that together, get folks to medical hospitals, secure the site, and take care of all those things. Again, it's one of the things that we are very grateful for, but if you would like me to go into more detail on that during the hearing, I would be glad to do that.

Senator TALENT. We are certainly grateful for that report. I am sure that when you have studied the accident thoroughly, you will conclude that one of the reasons there were no lives lost was the outstanding training and professionalism of the crew.

General MCNABB. Absolutely, sir.

Senator TALENT. It's incredible to me they could have had a crash like that without anybody being killed.

General MCNABB. Yes, sir, absolutely.

Senator TALENT. So, next time I am on an airline, I am really going to listen to the safety briefing.

General MCNABB. Yes, sir, absolutely.

Senator TALENT. Senator Kennedy is ready now.

STATEMENT OF SENATOR EDWARD M. KENNEDY

Senator KENNEDY. Thank you, Mr. Chairman, and I want to welcome General McNabb and General Schwartz and your associates to the committee. I think we are all mindful about the dangers that our servicemen and women in the Air Force, in this instance, are facing as they move through training, let alone being in the focus of combat. This is really something that all of us are very much aware of, and we appreciate the fact that—I think at the end of my time, I am interested in whether we had anybody from Massachusetts on that crew, but I'll talk to you a little later about that.

General MCNABB. Yes, sir.

Senator KENNEDY. Let me say we welcome you. As you well know, this committee has been enormously interested in the strategic lift. We were very much involved in establishing the USTRANSCOM, that we encouraged the Department of Defense to focus on strategic sealift issues and urged the Department to undertake the mobility requirement studies, and we authorized needed resources for strategic sealift. We are also the members of this committee that were there to help in the restructuring of the C–17 at the time when Senator Nunn was the chairman, and one of the only times we ever had a success against Sam Nunn was holding onto that program as well. It probably is the only mistake that he made in terms of our DOD and the Maritime Prepositioning Force. He was a tremendous leader and chairman. So, we are enormously interested and value very highly your recommendations. I think we are interested in hearing—I've had a chance the last evening to go through the past recommendations and reports over the period of the recent years and the varying requirements that have been there in terms of the numbers going back to 2001 and

2003 and so on. So, I think we are always looking at what is the real need. We are aware of what the administration has requested, but given the kinds of realities that we are facing—both in Afghanistan and certainly at the present time in Iraq, we want to examine closely what those needs are and what is the best way to meet those needs and to make sure that we are going to have the kind of support in terms of aircraft and variety that's going to meet our defense requirements. So, I want to thank you very much, Mr. Chairman, for having this hearing. I will look forward to asking some questions at the appropriate time.

Senator TALENT. Thank you, Senator. Let me just toss a general question out to you two generals here, and then we can follow up with some specific ones. I am interested in your view of how your textbook thinking regarding lift is panning out in view of the realities on the ground that you are facing. What would you say, just in your own mind, are the key lessons you have learned from today's operations regarding force utilization that you are going to take into account as you move forward? General, we entered this era, and you probably entered this job with certain presumptions or assumptions about what was going to happen. What has happened on the ground that has most changed your thinking in that regard? What would you say the key lessons learned are—and General McNabb also.

General SCHWARTZ. Mr. Chairman, I think for me, it has reemphasized the notion that we need versatility in the fleet mix, that having single purpose platforms in the era that we are now in is not that helpful. This allows the regional combatant commander and ourselves to organize ourselves according to the requirements of a specific mission or task, to do it with a variety of machines and what you have in the way that will best serve the mission. I think another realization has been that the days when we consider either maritime or airlift platforms invulnerable are long gone, and that it was at one time the thought that only combat aircraft are at risk, and that is no longer the case. It certainly calls for equipping our platforms as we have not completely. Certainly, we need to pursue the end game on this with the right kinds of self-protection equipment so that they can execute their missions even with adversaries that are difficult to identify on the battlefield. I think the final point I would make, sir, is that although I knew this instinctively coming in, I must reemphasize that the quality of our people is astounding. We are very fortunate. From the airmen to the sailor to the merchant mariner, we have a great team that in fact rocks and rolls on a routine basis, and it is preserving the quality of that force, I think, that we need to maintain focus on as well. We tend to look at platforms, but it is the entire family, I think, that needs attention too.

Senator TALENT. Yes, if there is one lesson I have learned from my 12 years on this committee or the one in the House, it's that we tend to be over optimistic about the ability of our equipment and our platforms to last or do what we want them to do or come in at the cost we want them to come in, but we tend to underestimate the ability of our people to make do with whatever it is we give them. That should lead us, though, I think to be even more

persistent and dedicated to try and get them the best that we can. General McNabb, do you have a comment on the question?

General MCNABB. Yes, sir. I think that getting to the statement you just made is that if we can focus on warfighting effect as opposed to individual platforms, we really make a lot of money for the Nation and combat capability and also do right by the taxpayer. I think that, as General Schwartz mentioned, as we look at our mix of aircraft, if we can figure out innovative concepts of operations because we have a new airlift airplane like the C–17 that can move from the strategic to the theater role very nimbly, to augment the 130 when necessary, but do the strategic lift like the C–5, when necessary, it gives us great flexibility to bring an awful lot of effect where the combatant commanders require. I think that end-to-end focus of the fact that we know that it's much more than platforms, it's a system. From my standpoint, sometimes the most important thing in our system is our ground handling equipment. I remember when I was a tactical air control center (TACC) commander, I had 12 C–17s and 12 tunner loaders, which was our big loaders that could offload a DC–10 and 747 as well as a C–5 or C–17. I tail number managed both of those because wherever I put them, they had immediate effect, and it was easier to turn airplanes faster.

The focus that this committee and others have spent on what is the proper enroute infrastructure for us to be able to fall into, you had mentioned talking about the contingency response groups, our ability to expand that very quickly allows us to get things done very quickly. That's my take and Senator Kennedy, you had an awful lot to do with it as we brought USTRANSCOM onboard. I was aide to General Cassidy during that period. Your help on both the C–17 and standing up USTRANSCOM, when you look at where USTRANSCOM has gone under General Schwartz and his predecessors, I would say that you can see the effect of that joint look across that is paying huge dividends for the Nation, looking at better ways of doing this. So, the flexibility that General Schwartz desires from me allows me to fill in with sealift and prepositioning equipment, but also see how we as a system work to the best advantage for the warfighting combatant commanders. The other portion I would say is that we focus on velocity and what the combatant commanders need not only today, but tomorrow as they transform for the future. I would tell you that when you think about it, General Abizaid is asking how do we get convoys off the road, how can we get our folks out of harm's way, when they ask General Schwartz, and he comes to me and says, "how might we do this?" We brought in C–17s and C–5s that took care of a lot of the big heavy lift, allowing the C–130s to take care of more of the "eaches," and the fact that we had the flexibility to do that really paid some big dividends for the Nation and very big dividends on getting people off the road that we didn't have to have out there. So, it saved lives. So those are the big lessons learned, I think.

Senator TALENT. The flexibility, velocity, vulnerability—I'll ask more about that when we talk about the tanker. Let me just go a little bit into assumptions, which I just asked about, and then I'll defer to Senator Kennedy for whatever questions he may want to ask. We talked about assumptions versus what's actually hap-

pening on the ground, and let me refer to that in the context of the latest MCS, with which you're obviously both familiar and had a lot to do. The MCS made certain assumptions about missions and about how we would use the various platforms that we have and then came up with an estimation of what level of lift we would need and what mixes might be appropriate in the context of those assumptions and came up with a range, the base of which was 292 units, I guess, of lift, but that assumes that the assumptions on which the study was based turned out to be correct. You both would agree with that, I think. So, let's explore a couple of those. For example, and the one that I hear the most often, in your judgment, did the MCS underestimate the amount of intratheater lift that would have to be carried by C–17s? My understanding is that in USCENTCOM now, they are using C–17s consistently for intratheater lift and that the MCS didn't take that into account. Is that your understanding, and is that a concern that you would have? General Schwartz, perhaps you would like to take that.

General SCHWARTZ. Sure. Sir, the MCS in fact did not really deal with the intratheater lift requirement, it deferred that to a subsequent study, which is now underway and nearing conclusion. I think fundamentally, the circumstance that we have faced, as General McNabb alluded to earlier, in-theater is a little bit different in that we collectively made a conscious decision that we were going to try to minimize our footprint on the road networks in Iraq, and that naturally drove up the air requirement—and not just for airlift aircraft, certainly it is also true for C–130s and C–17s. It has also flown the blades off of CH–47s. C–23s of the Army are flying extensively as well. So, I think in this particular scenario, the analysis did not anticipate the improvised explosive device (IED) phenomenon, which we have seen. The consequence of that, sir, is that we have operated certain of the assets, C–17 in particular, at a greater rate than we had planned when we originally established the laydown, which was 1,000 hours for 30 years. So, there is concern that we are operating certain pieces of our system at rates greater than we had anticipated. If you take a longer view of that, it is a legitimate concern. Interestingly, given that vehicles have relatively short lives, 5 or 10 years, people don't have much problem with talking about recapitalizing tactical vehicles. On the other hand, when you are talking about major capital end items, like ships and like airplanes that last 40 or 50 years, the depreciation of those assets is not as visible and perhaps not as well appreciated. I think the argument that the Air Force has made, I agree with, and that the Deputy Secretary has addressed, which is that again, taking the longer view, we need to recognize that we are expending airframe life and that we need to posture ourselves to the extent that we can to recover, and reset that scenario as best we can.

Senator TALENT. That's kind of an accelerated depreciation, really, of the C–17 in particular because of the desire to avoid that footprint. Would you agree with that, General McNabb?

General MCNABB. Yes, sir. I think that again, if you think about MCS, it did ranges. It did ranges for the strategic lift, 292 to 383. You mentioned the 292 number. It said that the capacity—and they didn't get into the types of aircraft, but it didn't do that on the 292

to 383 either. It just said we need about this capacity for intratheater, and it was 395 to 674. Primarily, discussion and the reason that was a large range was because of how do you treat the homeland security mission. Do we have to dedicate airplanes here to handle homeland security? Then, it did the same thing on the tankers. One thing that the Department did on MCS was it said that we want this to be a study that never stops. It stays in conjunction with the operational availability studies, and we always get to the next question.

So, the next question was okay, we have had a lot of discussion on the C–5/C–17, and that was actually answered in QDR, where we said okay, we have 292 to 383. Where do we come down on that? A lot of discussion on that was about where we should go and ended up that we figured 180 C–17s and 112 modernized C–5s. So, that's kind of where the Department came down in the QDR on addressing the strategic level. On the theater level, on the intratheater, we need to have the same discussion, and they are studying that now to take a look at okay, what's the right mix to meet that intratheater requirement? As you said, that is one of the lessons learned that I think that we have figured, is that the C–17 has been asked to do more and more in the intratheater role—to move things like Stryker, to move in the Future Combat System (FCS), to move Patriots, to move the Multiple Launch Rocket System—things like that that we know is not maybe a strategic requirement, but it will be what the theater commander will need to be done there in those initial stages of the war. I think that portion of the study will be very critical in saying how do we want to size this to make sure that, from my standpoint, I have the flexibility to meet General Schwartz's requirements as he brings in the COCOMs and said okay, now we have to be set. But this is a little different war than what we have, and I think that's where we end up saying hey, multipurpose allows us the flexibility to deal with different situations and still do it in a reasonable standpoint from a cost resource standpoint. There are lots of ways to do that, but I do think that is one of the things that I—there is no question that we have really been flying the C–17 hard. It has actually performed probably even better than what people thought back in the 1980s when we designed it and we said we are going to build an airplane that complements the fleet. It was both the future C–5, and then it was also the C–130 intratheater role. We built it that way. We made sure that it had air evacuation capabilities, and we built it around the back end. We built it with loadmasters in mind and how fast can we get stuff on and off an airplane so that we can increase its throughput.

It has paid huge dividends, as you all have mentioned. I think one of the best things is that almost every Member of Congress has flown into Iraq or Afghanistan, or both, on either a C–17 or a C–130 and got to see firsthand the value of having an asset like that. So again, I think that there is an awful lot of room there, and I really am excited about the intratheater look that's going to take a look and make sure that we get that portion right as well.

Senator TALENT. So, to summarize, that low-end range of 180 didn't take into account the need for intratheater lift. So, we may need just some more as a requirement. I hear you saying that. But

then in any event, General Schwartz, you are saying that we need attrition aircraft because we are flying the wings off. Would you guys agree with both of those statements?

General SCHWARTZ. Yes, sir.

General MCNABB. Yes, sir.

Senator TALENT. Okay. Let me go to one other assumption, and Senator Kennedy has been very patient. I know he is interested in this also, so I'll probably hand it off to him and then come back and do some more on this. The load levels—the MCS assumed optimal loading—efficient loading of C–17. You mentioned, General McNabb, velocity, the importance of turning things around quickly. I was relating this to if you're running a trucking firm. In figuring how many trucks you need, you may assume that you always keep the truck fully loaded. But if the customer really needs it, you may have to deadhead.

General MCNABB. Yes, sir.

Senator TALENT. Has that happened with C–17, and is that an assumption that perhaps the MCS overlooked?

General SCHWARTZ. Sir, I'll pass to General McNabb in a second. This is true not only for airlift, but sealift as well. There are certain assumptions on stow factor for sealift—65 versus 75 percent and a similar sort of assumptions for airlift. Bottom line is that our sense was, from an operator's point of view, that perhaps they were slightly optimistic—not excessively so, but in that range, maybe somewhat toward the optimistic side. Naturally, military planners tend to try to be very conservative worst case. Bottom line, though, however, is that as you indicated earlier, we tend to make good use of the platforms regardless of the empirical assumptions, and that has been our experience. For example, during Hurricanes Katrina and Rita, I think few would have imagined that we would have been combat loading C–5s out of Beaumont with patients as we did, and there are similar stories with the use of the assets in Iraq and Afghanistan as well.

Senator TALENT. General?

General MCNABB. Sir, I think again, there was a lot of discussion on load factors, and you'll have very good people disagree on how good you can get it or, however you do that. What I would say is that one thing that I know is that we are getting better at this. So, if you look back in hindsight on what we did in Operations Desert Shield and Desert Storm and what we do today and what we'll do tomorrow, I still think that there is an awful lot we can do to streamline that as we take it end-to-end, and you have the distribution process owner, you have everybody working together. One example is Defense Logistics Agency (DLA) building pure pallets that don't have to be transloaded when they get to Charleston or Dover, and we end up making the system better. While they each may take more time to do that at Susquehanna, for instance, because of the fact that you don't have to redo it at Dover and then redo it another time when you get it into theater, you have saved time overall in the system. So, those are the kinds of things that I look at. The overall command and control is something that I like to—you mentioned truckers, I mention National Association for Stock Car Auto Racing (NASCAR). I go to NASCAR and you win NASCAR in the pits. You get to the pits because you know what

you are trying to do when the thing comes in so that you win and you know, seconds win races. We are trying to design our systems so that we are constantly getting better and better at that, and there are a lot of ways of getting at that. Again, I think the way USTRANSCOM approaches that from end-to-end under General Schwartz as the distribution process owner is one of the things that's paying huge dividends. From my part in the AMC, I am already finding that pays dividends because when we get the stuff and the receiver is ready to get it off the airfield and go on and do the next thing, or when I land at a place to pick things up, they are absolutely ready to go. They have already been sequenced. They already have the radio frequency tag all set to go. They are really ready to get out of town. I would tell you another example is the fact that we have a very battle-tested force, and most of the people—15 years ago, there were units that had not deployed by air. There are almost no units today that haven't deployed by air, and you get better at this as you go. So, I think that what we want to do is take advantage of the lessons learned and take that to the next level.

Senator TALENT. So, we are getting better, but to this point, we haven't been able to use C–17 with as optimal a loadout as the MCS anticipated?

General MCNABB. Sir, my take on that is that when you think about MCS, you have to think about two full-out theater wars. My take is that we haven't been pushed to have to do that yet, so in many cases, we have done very good loadouts because of the way USTRANSCOM forecasts and so forth.

Senator TALENT. Fair enough.

General MCNABB. We have gotten better at it over time. That would be my take.

Senator TALENT. I think I hear you saying that you haven't to this point been pushed to the point where you have had to do that. Senator Kennedy?

Senator KENNEDY. Thank you very much, Senator Talent. General Schwartz, in your posture statement, you say that "recapitalization of the tanker fleet is my highest acquisition priority." Does that mean that tanker modernization has a higher priority than buying additional C–17 aircraft beyond the 180?

General SCHWARTZ. It does. In a resource-constrained environment, sir, if I have to make a choice between the first KC–X and the 181st or 201st or 221st C–17, I would opt for the new tanker, and here is why, sir, there are a couple of aspects to it. The truth of the matter is that again, the KC–135R is a grand airplane, but it is a single point airplane. Generally speaking, what it does is it refuels. What we need is a multimission tanker that can do both boom and basket refueling, that can do passenger lift, some cargo lift and have defensive systems that allow the airplane to go wherever we need to take it. The reason for that is this, sir, I'll give you an example. We are taking passengers today into Balad and into Baghdad on C–17s because it can protect itself. If I had an airplane that could carry passengers there with a defensive system like a new tanker, I would use that instead, and we would be able to better manage the workload on the C–17 fleet and apply it against the things that it does exceptionally well—moving cargo.

Additionally, I think a key thing is that it is important to understand that we are a system, again, that involves both organic government assets and commercial resources. We depend heavily on a Civil Reserve Air Fleet (CRAF) on the air side, just as we do on the maritime side with our commercial partners. The airline industry is in distress. Three of my CRAF carriers are currently in bankruptcy—Delta, Northwest, and Gemini. What I need is to have a platform that gives me a little bit of insurance against continued stress in my CRAF family. KC–X, that multimission tanker, is the kind of platform that could buy me that insurance. So, in short, sir, I do believe that for America, for the Armed Forces, that we get better marginal value out of a new tanker than we do out of more than 200 C–17s.

Senator KENNEDY. Let me just—these other airlines, the other planes, I mean JetBlue and Southwest, they don't—they are planes that go for these low-cost carriers—are they sufficiently different as to be outside of the——

General SCHWARTZ. Sir, in fact——

Senator KENNEDY. I want to get—I don't want to spend a lot of time on that——

General SCHWARTZ. I understand.

Senator KENNEDY. —but I would be interested if you could give me a quick——

General SCHWARTZ. Quickly, there is a dynamic afoot in the industry to more efficient airplanes.

Senator KENNEDY. I see.

General SCHWARTZ. Fewer wide bodies, more narrow bodies, and that is not the kind of thing that we need, frankly. Now, passenger carrying is fine cargo is not, and the bottom line is that short-legged airplanes are not international operators. It is the international operations, and it is the—typically, the wider-body kind of aircraft that we seek.

Senator KENNEDY. Okay. Is tanker modernization more important than any of your other programs funded in the current budget or in the future years defense program?

General SCHWARTZ. Sir, as we put together the program, and I believe that the President's budget properly reflects this, we made judgments on priority. As you are aware, a solicitation should soon be released by the Air Force to respective vendors on providing proposals for the new tanker. I think that the arrangement that we have currently, which is to modify the C–5s, both reliability and avionics, to perhaps purchase a few more C–17s in the single digits, and to get after this new tanker is the right array for best use of the taxpayers' treasure.

Senator KENNEDY. I was just going to ask General McNabb on this, and perhaps General Schwartz can answer it. Someone suggested we could retire the C–5 and use the savings to buy the additional C–17s. So, I understand the C–17 costs roughly $200 million, and how much does it cost annually for the operative support of the C–5A aircraft?

General MCNABB. Sir, I'd have to take that for the record.

Senator KENNEDY. $3, $4, or $5 million, does that sound generally about right?

General MCNABB. Yes, sir.

[The information referred to follows:]

The average C–5A/B direct cost per flying hour is $20,844. The average annual flying hours per C–5A/B are 603 for the Active-Duty, 458 for the Air Force Reserves, and 250 for the Air National Guard respectively. Therefore, the average annual direct operating costs per C–5A/B are $12.6 million for the Active-Duty, $9.5 million for the Reserves, and $5.2 million for the Guard respectively.

Senator KENNEDY. Yes.

General SCHWARTZ. Sir, let me just comment, though, that from a pragmatic point of view we need to modify the C–5s. The C–5 is a unique airplane. We need to do that. Now, the bottom line is that we should not compete C–5 and C–17, just like the study, and we have argued that you need 292 big airplanes. That is the bottom line.

Senator KENNEDY. All right.

General MCNABB. Sir, if I could jump in there.

Senator KENNEDY. Sure.

General MCNABB. I fully agree with that. I think that as you look at it, the whole thing was predicated on 292—you need 180 C–17s and 112 C–5s. What we know is we are going to Avionics Modernization Program (AMP) all of the C–5s. We are testing one C–5A and two C–5Bs to see how they do with the new engines. I would tell you that as we look at that, one thing that we know is we have a lot of service life left in those C–5s. Right now, we have the C–5As in the Guard and Reserve equipped units. So, we don't fly, we use them as part of our surge fleet. They do a great job at maintaining them at a fairly low cost. I think that is working out very well, and they still have a lot of service life left. So, my take is, as General Schwartz's, the AMP does essential safety mods that are absolutely important to us. It also allows it to fly under the airspace environment that we have today and will have tomorrow. Then, the reengine portion: we'll get to see how the test goes, but I think most folks think that that's going to give us a significant increase in capability, and I think that we can call that later. But I, like General Schwartz, do not see those as competitive.

Senator KENNEDY. Thank you. General Schwartz, in your posture statement you note some potential problems with the tactical airlift. Your statements say the retirement of the C–130s, if permitted by law, would reduce C–130J procurement and restrict it, and grounded aircraft would push the C–130 below the MCS lower-bound requirement of 395 combat delivery platforms required to meet the defense strategy as early as 2007. So, what steps are you taking to mitigate the potential shortfall?

General SCHWARTZ. Sir, General McNabb can address this in detail. Fundamentally, there are a couple of initiatives underway. Some include rewinging C–130s and improving their avionics as well. We are going to buy a total of 79 J model C–130s. That's needed. It's a good airplane, and I certainly endorse that. There is now a program of record called the Joint Combat Airlifter (JCA). Sir, that is the way of the future. Again, this is a question of versatility in the fleet mix. The answer to every tactical airlift problem is not the C–130 in the environment we are entering. Having a range of machines sort of like a mini C–130 that can do two, three, or four pallets into 2,000 feet, a C–130-type aircraft, and

then perhaps the C–17 in an augmentation role is the right way to work the in-theater lift problem.

General MCNABB. Yes, sir, and I fully agree with that. I think that there is a way of shaping that fleet, and one of the things that that intra-theater study under the MCS is looking at is what is the right mix of airplanes. As you said, the capacity is about 400. We need a couple of the 79 Js with our current fleet of C–130 H2s and 3s. My take is we have a little bit over 300 really good 130s that will last us for a long time, especially if we get the AMP on those 130 H–2s and 3s to standardize them and again, put required safety mods on there so that we can fully use them. So, if you look to the future, one of the lessons learned from the war is as we look at what we are actually doing in theater is the 130s are moving folks around and normally two to three pallets, which is less than a 130 load. The JCA might give us the smaller airplane that meets that niche, but also provides the persistence that the Army and our ground forces need.

Senator KENNEDY. Thank you very much. Very thorough and comprehensive responses to a lot of different questions here have been very helpful to me. Thank you, Mr. Chairman.

Senator TALENT. Thank you, Senator. With regard to the MCS, my understanding is that the original requirement for the Army's FCS was that it be C–130 transportable, and they are now moving towards—I don't know whether this is official or not—that at least part of that be C–17 transportable. Is that your understanding? Is that one of the reasons, General Schwartz, why you are saying you could use some more C–17s if the fiscal environment permits it?

General SCHWARTZ. Certainly. I think the key thing here, though, is that the Army has not fallen off the 130 compatibility for FCS, and the reason is because they are trying to exert discipline on the development process. That's the right thing to do so that the FCS vehicle—or actually, it's a family of vehicles—might, in fact, be compatible with the C–130, but not in its full-up mode. In other words, it wouldn't have its full complement of exterior equipment, for example. You might have to take bumpers and fenders off and that sort of thing to get into the Herc. On the other hand, clearly, if it's on a C–17, it's a roll-on roll-off kind of operation. But the key thing is I know that General Schoomaker is focused like a laser on maintaining discipline in the development process so that he has a vehicle that is versatile, just like we prefer airplanes which are versatile, so he can go different ways. We will never be able to get it on a JCA probably, but to some extent, a Herc and certainly on a C–17. I think that the key thing, sir, is that there will be a need for tactical delivery of those machines. Depending on the timing of the requirement, if it's early in a deployment, it's difficult when you are surging your long-range insertion. If it is subsequent to the major deployment activity, say outside of 15 to 30 days, that is a more manageable circumstance. So, I think my point would be that FCS will be both the 130 and a C–17 lift requirement and that the timing and of course, the scope of the battle we are speaking of will have a lot to do with whether there is leakage from the intertheater requirement of 292 platforms.

Senator TALENT. It's amazing how all of this just depends on other assumptions you mentioned in the initial phases.

General SCHWARTZ. Without a doubt.

Senator TALENT. I know the MCS assumes that you have a lot of surge, obviously, in the first 30 days and that after that, it begins to fall out, which is the way that the MCS assumes or concludes that you can meet the two contingency requirements. Of course, war being what it is, we don't know whether there will be a substantial drop off in the first contingency after the first 30 days, do you?

General MCNABB. Sir, one of the things that they found in MCS is they looked at the inter- and intra-. Again, they looked at the intratheater capacity that they needed, but one thing that they found was the peak for intertheater was different than the peak for intratheater. So, one of the things that came up is well, we will be able to swing some assets. That's not surprising because as you think about sealift and you think about once Sea Line of Communication (SEALOC) closes—what we used to say about the C–17 is it was primarily strategic until SEALOC closure, and then it would swing to the intratheater role and do that. So, that is one way we would look at it. The only portion that isn't caught in there is during that peak, when you are doing the strategic flow, if there are intratheater requirements that require an outsized carrier like the C–17—and again, I can use Patriots or Strykers or FCS. If, in fact, they want to move them, that's the one that I really want to make sure that we get a focus on because that could happen early, and that is one thing that we are talking to the Army and the COCOMs about to just get a feel for are there requirements in there that you will have to have an airplane the size of the C–17 to do efficiently. Again, you can work around that. But again, that is not in MCS as it stands now.

Senator TALENT. Let me—without going through all these because I notice—time always goes by when you're having fun, doesn't it? General Schwartz, let me just ask then if it's still your view, and you addressed this subject before the House Armed Services Committee (HASC) and I'll get the C–17 put to bed here. I know that you can't just quantify these things down to absolutely the finest point. But it was your view before that committee, and I am wondering if it's still your view, that in view of the evident need for greater intratheater lift, the potential issues regarding FCS, the questions regarding a more prolonged phase IV, which I didn't go into at great length, that subject to the fiscal constraints that you mentioned before regarding the tanker, that you do think it would be good or you would like to have more than 180 C–17s, and what number would you think is appropriate?

General SCHWARTZ. I would say on the high side of 180 to 190. The other aspect of this, Mr. Chairman, is there is a top line above which I am not very comfortable, and that, as I have testified previously, is in the neighborhood of 200. The reason for this is that if you have to manage a fleet, as I am expected to do, and that includes not just the Government-owned fleet, but the commercial resources as well who we depend on, that any time when you're not as stressed as we are now, in other words, a more peacetime mode, too many organic airplanes mean you either fly your organic air-

planes empty when you train or you steal cargo from your commercial partners who need that to remain viable so that they are there to surge with you in war time. So, my sense is the ceiling on this is about 200. The spot for me, based on, again, the constraints that I see with regard to resources and the imperative for getting on with the tanker is in the high 180s.

Senator TALENT. Now, you said the ceiling, and I want to make certain that we choose your metaphor properly, you told the House you thought the sweet spot was around 200.

General SCHWARTZ. Right.

Senator TALENT. So, the sweet spot or the ceiling, and I understand fiscal constraints.

General SCHWARTZ. Yes.

Senator TALENT. It would be nice to have 200. You think you probably need because of attrition aircraft in the upper 180s or 190s?

General SCHWARTZ. Correct. Yes, sir.

Senator TALENT. Okay. I understand that if you are forced to a choice between the tanker and—that's a pretty tough choice to be forced to. But if you are forced to a choice, that you would choose to fund the tanker first. Let's go to that, as a matter of fact. We do need to recapitalize the aerial refueling fleet of the KC–135s, and I am wondering how you are going to make the timing of this work because there are 530 of the aircraft, and we would anticipate procuring 10 to 15 per year. It'll take quite a while, obviously, to procure. Moreover, you have expressed a desire to retire the 78 KC–135Es in fiscal year 2007 and the remaining 36 135E and D models the following year, which would obviously be before we would have the replacement aircraft. Since that one ended up producing the fleet, should we assume that we can do the actual aerial refueling requirements with 59 KC–10s and 417 KC–135s, which is what you would have left in the interim. Should we expect a one-for-one replacement strategy for recapitalizing the remaining KC–135 fleet? Also address—when you were talking before about lessons learned, you talked about the importance of trying to make these platforms less vulnerable. So, reflect on how that might affect your thinking as you procure this new tanker.

General SCHWARTZ. This is really more in General McNabb's lane, but let me just give you a general sense of things. The E model 135 fleet is not very productive outside the continental United States (CONUS). Twenty-nine aircraft are currently grounded—can't fly. Another 60 or so are restricted, and then the remainder of the 114 do largely CONUS, what we call Operation Noble Eagle missions, that is, national air defense kind of operations—training and so on. So, when we talk about what goes down range, it's not the E models. We would probably—if we retired all the E models and did not replace them, we'd have an 8 or 9 percent reduction in our refueling capability roughly. My view is that getting after the new tanker and making space for the crews—in other words, really getting the crews out of the E models and getting the maintainers out of the E models and applying them to an airplane that is very reliable, the KC–135R to get better utility out of that airplane is the best strategy. So, I am saying take down the old iron, realign the manpower to the more capable, more reliable,

higher sorti-generating air asset. I think overall, we will be much better off. One final comment, there are those who believe that to have a multimission tanker is a bad idea because you'll never be able to use it as an airlifter because you'll have to refuel. My experience does not confirm that. Particularly, in terms of the global war on terrorism, if we are going to go to war with Iran or Korea or over Taiwan or a major scenario, the first 15 to 30 days are going to be air refueling intensive, but what I am talking about is the global war on terrorism, sir, for the next 15 or 20 or 25 years. That is not an air refueling intensive scenario, and that's why a multimission airplane to me makes sense. Focusing this not on replacing R models to begin with, but rather the E models is the best approach. General McNabb?

General MCNABB. Sir, I agree with what General Schwartz mentioned. Our plan is, in fact, to take those crews and take those great maintainers and apply them against the KC–135R, and that's the reason you get the rather smaller decrement and capability as we want to retire those 114 E models. I think that that also sets us up well as we look at flowing new tankers to those units, that they will already have a robust maintenance base and a robust crew base. Our hope is that the new tanker will do for strategic mobility, and I would just say mobility in general, what the C–17 did between strategic and theater lift. We want the new tanker to be kind of that multipurpose that can be primarily a tanker, but then can augment the strategic lift equation when required—so do the same kind of thing, have the same kind of dramatic impact. Floors, doors, and defensive systems allow us to do that.

Again, as General Schwartz had mentioned, if you look across a 30- to 50-year life cycle of an aircraft when we need to have those as absolute tankers when we are in a two-theater war scenario, but when you look across 50 years, there are going to be an awful lot of other times that we are going to be in a position where we can use that asset if it's properly configured to do some other things—for instance, augment CRAF. We talked earlier about the C–17 and the 180 and how did that all play out. I have mentioned before that my take on that is it's the leakage from that 180 airplanes that I worry a lot about. Right now, I have to use those airplanes to transload stuff from the CRAF, and that's why a new tanker that has floors, doors, and defensive systems that if the CRAF cannot go all the way forward, we can offload it to the tanker. Then folks will say well, "if the balloon goes up and you need the tankers for air refueling," I, go "Then I am exactly where I am now." But for most of the time, it'll be fine. So, from my standpoint, that'll be a very good use of the taxpayer money, and I think that when you go out to the COCOMs—and as they came in and said, "here's the kinds of things we need in the new tanker," they mentioned six things, and they said we must have defensive systems, we must have realtime information in the cockpit, and we need the boom and drogue on the same sortie. There is no difference. You can very quickly do that. Receiver air refueling—that will allow us to use this airplane much more to change our concept of operations and not have airplanes come back with a lot of fuel aboard, which happens today. Aeromedical evacuation, night vision operations, and forward air refueling points. Right now, we will use C–17s and

130s to take fuel bladders forward to take care of our forces on the ground. You can imagine the utility of having a tanker that could go in there with the fuel already set how great that would be. This went through the Joint Requirements Oversight Council, and this is what the COCOMs say they need now. I would say that we can bring this on, and this will have a huge impact on the way we do business. So, when you ask your question of whether or not you have to do a one-for-one replacement, I would say that I think it depends on the concept of operations, but I think that we can do better than that. But again, you will have to bring these airplanes in and increase the crew ratio on them and increase the utilization rates that we are going to do and how we are going to fly them. Again, I am real excited about what that new tanker represents. Much like the C–17 came in and changed how we did airlift, I'm thinking this new tanker is going to come in and allow us to change how we do air refueling.

General SCHWARTZ. If we replace one-for-one, we are not giving you your money's worth.

Senator TALENT. Okay. It sounds to me like a key are those defensive systems. This aircraft can't be vulnerable and do everything you want it to do.

General MCNABB. Not just that one.

General SCHWARTZ. Sir, that is certainly true for the new tanker, but there are existing assets that we need to equip with defensive systems as well. Certain very important person movement platforms, for example, are not so equipped, and they need to be without delay. That's an important imperative too.

Senator TALENT. We're going to have a vote soon, but I didn't want the hearing to go by without asking a sealift question because of——

General SCHWARTZ. General McNabb can take that one, sir. [Laughter.]

Senator TALENT. Yes. Well, let me keep it general then, and I am interested in particular—and we can submit others for the record.

General SCHWARTZ. Sure.

Senator TALENT. So, General Schwartz, just give me then your general views, your vision for recapitalizing our sealift assets. The Ready Reserve Force on average is 30-plus years old. Then, give me your thinking about how that would relate to the Navy's planned seabasing capabilities.

General SCHWARTZ. Right.

Senator TALENT. I'm still trying to get a firm grip on the seabasing concept in action, and I'd like to know what you think of it—not of the seabasing. That's obviously the Chief of Naval Operations (CNO), but how would you see our sealift assets interacting with that?

General SCHWARTZ. Yes, sir. The difference between the way the Ready Reserve Fleet, which is currently 58 platforms, sir, performed after Operations Desert Shield, Desert Storm, and for Operation Iraqi Freedom is night and day. We had readiness and reliability issues in the 1990s. Your committee decided enough of that and we're going to invest in the platforms, in their maintenance and so on so that when we call on them, they'll be ready. That has been the case for the last 3½ years, and it is something we need

to continue. We will make some adjustments in the Ready Reserve Fleet, taking it down. We are going to reinvest those dollars in readiness and long-term service life extension so that the platforms will be good for 50 years. That's the front end strategy on the Ready Reserve Fleet. As you are aware, we have a number of specialty platforms that are in various stages of readiness. The fast sealift ships are on average 30 years old, of which we have eight. We have 11 large medium roll-on roll-off (RORO) platforms, and they range from 25 years to just very recent production within the last 10 years. Clearly, we need to look ahead on how to recapitalize the fast sealift capability. We don't need a lot, but the truth is there is no counterpart for fast sealift in commercial industry. There is no need for it. So, this is a unique military requirement. We don't need a ton of it. But particularly for those scenarios where we have to cycle these platforms more than one trip, you really gain a lot by having a 27-, 32-, or 34-knot platform rather than 24 knots or below. Fast sealift is point one. Large Medium-Speed Roll-on/Roll-off Ships (LMSRs)—really the crown jewel, which are the vehicle carriers, there are two ways to do that. We need to have some in the organic fleet and we need to make these platforms last. But part of our strategy is to try to gain access to them in industry, and we have been increasing that through the Maritime Security Program.

We have added several RORO platforms that are in commerce that cost us a couple million dollars a year to assure their availability when we call on them. But otherwise, the Government does not have to underwrite their maintenance and so on and so forth. That is a very high leverage way to maintain the Nation's sealift capacity, and we are working to increase the RORO contribution as compensation for taking out some of the oldest very low-utility ROROs in the Ready Reserve Fleet. So, a combination of things; MCS, sir, because it looked at 2012, said the sealift is fine, and it is. But as we move beyond 2012 toward the end of the second decade, we will need to recapitalize. That is a Program Objective Memorandum (POM)–08 POM–10 issue for us, and we are not going to let that slip away. You asked me about seabasing. It's a good approach, but there are those who believe that the platforms that support the seabase should be dedicated. I'm not one of those. Dedicated platforms are a bad idea. No more than in the 50 years that General McNabb talked about will you be in a situation where tankers will be in a surge refueling mode. It is also difficult to conceive that you will have a seabase established indefinitely. So, the platforms that we build to support the seabase need to be multimission too so that when they are not required to have marines onboard, or Air Force ammunition or Army equipment, that they can be used in the common user fleet.

In other words, tasked by USTRANSCOM for the benefit of the Armed Forces more broadly. That is an important imperative which I am working with the Navy and the Joint Staff to assure that we retain access to those platforms when they are not otherwise employed in a seabasing scenario—very important. Fourteen ships currently is what the Navy is thinking about. That is not a trivial-sized flotilla, and I believe it would be unfortunate if those

platforms that lend themselves to the movement of equipment were not generally available to the rest of the Armed Forces.

Senator TALENT. Are you working with the Navy in terms of requirements for that since it's your position that you'll have access to them when they are not needed for seabasing purposes?

General SCHWARTZ. Indeed, sir.

Senator TALENT. All right. We may have some more questions for the record, and of course the committee members will have the opportunity to submit those. But subject to that, the hearing is adjourned. Thank you, gentlemen.

General SCHWARTZ. Thank you, Mr. Chairman.

Senator TALENT. Thank you again for your service and your testimony.

General MCNABB. Thank you, Mr. Chairman.

Senator TALENT. The hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTION SUBMITTED BY SENATOR JOHN MCCAIN

C–130 MODERNIZATION VS. REPLACEMENT

1. Senator MCCAIN. General McNabb, the Air Force cannot fit all its program requirements into its limited procurement accounts. There are tough choices ahead concerning several resource-intensive programs and it will be imperative that fiscally sound decisions are made. There is an option to update the aging C–130 fleet that includes avionics modernization, a center wing box replacement, and an engine modification which will require fewer resources than procuring new C–130Js and/or Joint Cargo Aircraft (JCA). How can the Air Force justify using a great deal more resources in procuring new aircraft rather than pursuing the less expensive modernization program for the C–130 fleet?

General MCNABB. We are pursuing a dual strategy because neither approach alone provides the minimum capability required by the warfighter. This strategy combines targeted new aircraft acquisition with fleet modernization. First, we are acquiring 72 combat delivery C–130Js and the JCA to replace 170 aging C–130Es. The C–130J has proven to be a force multiplier operating in support of global war on terrorism. The JCA will close a capability gap identified by the Army during Operation Enduring Freedom (OEF) to resupply/sustain troops in remote mountainous regions and to support time sensitive combatant commander (COCOM) requirements.

Second, we are modernizing the C–130H variants to make them compliant with safety and civil airspace mandates. The C–130 Avionics Modernization Program (AMP) provides a common cockpit configuration and reduces sustainment costs. Center wing box (CWB) replacement of the H-model aircraft is imperative to meet ongoing and future commitments.

Our overall strategy reduces the planned combat delivery C–130J procurement from 150 to 72 aircraft. Retiring the E-models reduces the overall C–130 AMP and CWB replacement bill as well as the cost of sustaining a 41+ year old fleet. Additionally, I believe it prudent to replace the C–130E fleet with an aircraft capable of closing the capability gap and supporting ground forces well into the future.

QUESTIONS SUBMITTED BY SENATOR EDWARD M. KENNEDY

STRATEGIC LIFT TO SUPPORT A TRANSFORMED ARMY

2. Senator KENNEDY. General Schwartz, one of the concerns about the mobility requirements study (MRS–05) analysis was that it predated the major restructuring of the U.S. Army, which is now planning on modular brigades and the Future Combat System (FCS). Did the mobility capabilities study (MCS) remedy these deficiencies in the previous analysis?

General SCHWARTZ. The MCS ensured all Services updated required force structure expected in 2012 and did include Army modular brigades equipped with Stryker Combat Vehicles. The FCS will be fielded beyond 2012 and therefore is not included in MCS. However, the footprint for both is similar. Maintaining the unit integrity of these brigades was considered in the deployment of these forces.

3. Senator KENNEDY. General Schwartz, are there other changed circumstances that MCS did not adequately consider? Are you confident that MCS and the Quadrennial Defense Review (QDR) allow us to gauge the proper demand for strategic airlift?

General SCHWARTZ. Our goal is to maintain enough flexibility to adapt and continue to support the COCOMs. I am inclined to agree with the MCS and QDR regarding strategic airlift with the 180 C–17s programmed and the C–5 modernization that could complete by fiscal year 2020 for the scenarios examined. That said, up to an additional 20 C–17s would add to our confidence and flexibility in supporting unforeseen events. MCS work continues and is beginning to address the program needed for recapitalization of our air refueling fleet.

AVIONICS MODERNIZATION PLAN AND RELIABILITY ENHANCEMENT AND REENGINING PROGRAM

4. Senator KENNEDY. General McNabb, in 2001, the Air Force sponsored analysis by the Institute for Defense Analyses (IDA) which concluded that upgrading the C–5 fleet, both C–5As and C–5Bs, with the Avionics Modernization Program (AMP) and the reliability enhancement and reengining program (RERP) was the most cost effective alternative for increasing strategic airlift capability. I appreciate your comments that you are waiting to see how the test program turns out for the C–5A AMP and RERP process. Has the Air Force seen anything thus far in the development of the AMP and RERP that would alter the previous Air Force and IDA conclusion?

General MCNABB. No, the Air Force has not seen anything in C–5 AMP or RERP development that would alter previous Air Force and IDA conclusions that upgrading the C–5 fleet with AMP and RERP is a cost effective alternative for increasing strategic airlift capability. The Aeronautical System Center (ASC) predicts that C–5 AMP operational test and evaluation (OT&E) will successfully validate all of AMP's key performance parameters (KPP). The Air Force predicts it will achieve similar success with RERP KPPs. However, RERP KPPs will not be validated until RERP OT&E is complete, estimated by fiscal year 2009.

5. Senator KENNEDY. General McNabb, assuming that the testing program validates the expected improvements in readiness, how do you intend to use the updated C–5A/B fleet to compensate for the unexpectedly high utilization rates the C–17 is seeing as a result of Operation Iraqi Freedom/Operation Enduring Freedom (OIF/OEF)?

General MCNABB. A modernized C–5 fleet with defensive systems capability will fly intertheater direct-delivery to the warfighter. The demand for airlift still outweighs the supply. The MCS minimum number of 292 aircraft was predicated on modernized platforms whether C–17 or AMP/RERPed C5s. One of the critical assumptions of the MCS is that the C–5 modernization program will be successful. It will take both the full buy of C–17s and the modernization of the C–5 fleet to meet the minimum requirements of the MCS. The increased capability that a modernized C–5 fleet will provide should allow us to reach further down the Joint Chiefs of Staff (JCS) priority list and provide greater support to the warfighters. It will also provide us with greater operational flexibility by allowing us to take full advantage of the C–17's multi-mission capability in support of the warfighter's intra-theater airlift requirements.

6. Senator KENNEDY. General McNabb, the Air Force is on record that they are using up C–17 service life more quickly than anticipated. Once C–5 reliability improves, shouldn't we be able to increase its utilization and cut back on C–17 use for inter-theater lift, in effect buying back some service life?

General MCNABB. With improved reliability, C–5 utilization should increase. However, the demand for airlift outweighs the supply. Improved reliability and increased utilization that a modernized C–5 fleet will provide should allow us to reach further down the priority list and provide greater support to the warfighters. It will also provide us with greater operational flexibility by allowing us to take full advantage of the C–17's multi-mission capability. Even after the C–5 is modernized, it is still a much more expensive asset to operate than a C–17. To keep the cost of operation down, we plan to put the majority of our C–5 fleet in our Air Reserve component, our "surge" force.

PROTECTION SYSTEMS

7. Senator KENNEDY. General McNabb, I know that the Air Force has previously equipped some of the C–130, C–141, and C–17 cargo aircraft with an add-on armor ballistic protection system. These kits provide protection to crew and critical systems from ground fire during approaches and departures, when the aircraft is most vulnerable to these threats. Has the Air Force evaluated the effectiveness of this system? If so, what is your assessment of the effectiveness of making these improvements?

General MCNABB. Based on developmental testing of the system used on C–130s and C–17s, Air Mobility Command is confident these systems provide necessary additional measures of protection where installed.

8. Senator KENNEDY. General McNabb, we all know that the C–5 was intended for strategic and not tactical transport applications. In the new environment we face, however, "tactical" threats could be present anywhere. I am sure that considering this new reality has led the Air Force to begin testing a version of the large aircraft infrared countermeasure (LAIRCM) system on a C–5B. Since the crews operating the C–5 fleet could be subject to such "tactical" threats as surface-to-air missiles, it would seem to be prudent to protect these crews from direct fire threats as well. Is the Air Force considering applying such add-on armor ballistic protection systems to aircraft in the C–5 fleet? If not, why not?

General MCNABB. In close coordination with Office of the Secretary of Defense (OSD) live fire test and evaluation (LFT&E) experts, Air Mobility Command is evaluating alternatives to add aircraft armor to the C–5 in much the same way armor was installed on the Lockheed C–141.

TACTICAL AIRLIFT IN THE ARMY AND AIR FORCE

9. Senator KENNEDY. General Schwartz, the Army intends to buy a Future Cargo Aircraft (FCA) as part of the Comanche helicopter cancellation 2 years ago. While this aircraft would not provide as much intra-theater lift capability as the C–130 aircraft, it would provide some capability. Now the Air Force is also intending to buy much the same aircraft under the Light Cargo Aircraft (LCA) program. I believe that the Department is now calling these programs the JCA. How does the JCA program for cargo aircraft affect your plans?

General SCHWARTZ. Most Vietnam-era C–130E/H aircraft show significant signs of aging due to extensive tactical airlift use. These intra-theater airlifters suffer from structural problems; evident from the center wing box failure resulting in 21 grounded aircraft with another 58 operating on flight restrictions. Grounded aircraft cost $7 million to $9 million per aircraft to fix and restricted aircraft cost approximately $700,000 to repair, while only increasing aircraft lifespan by 3–5 years. The bottom-line is that grounded aircraft are of little long-term value to the Department of Defense and restricted aircraft are limited to training missions. If we do nothing to fix the aging C–130 problem, then we would fall below the MCS-stated threshold as early as fiscal year 2007. However, the Air Mobility Command's most recent mitigation plan relies, in part, upon JCA acquisition to ensure the MCS-stated threshold in intra-theater aircraft is not approached.

10. Senator KENNEDY. General Schwartz, how would you account for the contribution of such Army and Air Force cargo aircraft?

General SCHWARTZ. The Department of Defense is just beginning to shape the contributions that will be made by the JCA. The JCA will be an integral part of a focused logistics network necessary to support a dispersed and networked future combat force. Its flexibility, including robust takeoff and landing capability, will maximize operations across the spectrum of military operations. Access to unimproved landing areas will provide the joint force commander a throughput of priority supply, personnel, equipment, and materiel to the right place, at the right time, and in the right quantity, across the full range of military operations.

11. Senator KENNEDY. General Schwartz, have you and your staff been involved in considering how to proceed with the JCA program?

General SCHWARTZ. Yes, our involvement began over a year ago when the program solely resided within Army channels as the Future Cargo Aircraft. After Program Decision Memorandum (PDM) III directed that the program evolve into a joint Army and Air Force venture, we have been involved in shaping the future of the JCA. My staff and our air component, Air Mobility Command, are working in concert with the Army staff in the pursuit of this future joint airlifter.

SUPPORT FOR CIVILIAN-OWNED STRATEGIC LIFT RESOURCES

12. Senator KENNEDY. General Schwartz, the administration has asked for legislation that would require a minimum annual purchase of services from Civil Reserve Air Fleet (CRAF) providers. I understand that the Department believes that you need to do this to ensure that the CRAF aircraft owners will have sufficient commercial activity to ensure that their aircraft are available in wartime.

I also understand that the Department of Defense (DOD) has recently reversed its policy of relying on commercial shipping companies first and relying on Government-owned or Government-controlled ships if commercial vessels are not available. Presumably, these peacetime cargo bookings help U.S.-flag operators have sufficient commercial activity to ensure that their ships or aircraft are available in wartime. Now, however, DOD has said that the priority should go to the Government-owned or Government-controlled vessels. How are these policies consistent?

General SCHWARTZ. The administration has submitted section 802 of the Fiscal Year 2007 DOD Authorization Bill, Minimum Annual Purchase for CRAF contracts, to allow the DOD to guarantee a minimum level of business to our commercial partners that more accurately reflects the services we expect them to provide. DOD currently guarantees a small part of our annual business based on known requirements at contract award with the remainder of our business being awarded throughout the year as needs develop. With fewer troops stationed overseas, the known requirements at award will continue to dwindle. Air carriers need guaranteed business contracts to obtain financing for fleet expansion and operating costs. The proposal should not result in any increased costs to the Government.

It has been, and continues to be, USTRANSCOM policy to support the National Sealift Policy in that, "The U.S.-owned commercial ocean carrier industry, to the extent it is capable, will be relied upon to provide sealift in peace, crisis, and war." This national directive is the foundation of our vessel selection process. The bedrock of this directive is to promote the U.S. sealift industry with Government business, resulting in an increase in jobs for the U.S. mariner and more business for U.S. flagged vessels. Vessels that are Government-owned or Government-controlled should not compete with commercial industry for business.

Every attempt will be made to satisfy transportation requirements using commercial resources. However, when commercial resources and schedules cannot satisfy requirements, Government-owned or chartered vessels will be activated or utilized. These activated ships shall be employed appropriately to augment the commercial fleet in support of DOD requirements. These organic vessels will be used judiciously and with forethought to ensure they are not in competition with commercial industry whenever possible.

During wartime and contingencies, we anticipate a surge of organic capacity to meet wartime requirements. That is not to say that commercial capacity will not be used, quite the contrary. We will fully seek commercial solutions early and often throughout the stages of a contingency in order to satisfy strategic requirements. Relying on the privately-owned, U.S.-flagged commercial merchant marine as a source for national defense sealift, benefits the United States military in many ways. For example, it provides global reach, access to valuable commercial intermodal capacity, immediate guaranteed access, reduced U.S. military footprint, and a reserve of strategic capacity.

13. Senator KENNEDY. General Schwartz, does this mean that you do not need as much sealift augmentation in wartime as we had thought you would need?

General SCHWARTZ. Not at all. We continue to maintain a proper mix of organic and commercial assets to meet our sealift requirements. As our organic fleet ages and is removed from service, recapitalization options are considered. These options include the Maritime Security Program and contingency contracts with our commercial partners, new construction, modification to existing hulls, or other commercial ventures. The MCS determined that our current sealift capacity is adequate, and we will maintain that capacity with a mix of organic and commercial assets.

SELL USED C–17S AND BUY NEW

14. Senator KENNEDY. General McNabb, at various times, some have suggested that the Air Force sell some of its older C–17 aircraft and use the proceeds to buy new ones. Is there any such proposal that the Air Force is currently evaluating?

General MCNABB. While there have been discussions on the feasibility of selling used C–17s, the Air Force is not currently evaluating any proposals to sell older C–17 aircraft to offset the cost of new aircraft.

[Whereupon at 4:54 p.m., the subcommittee adjourned]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 2007

THURSDAY, APRIL 6, 2006

U.S. SENATE,
SUBCOMMITTEE ON SEAPOWER,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

NAVY SHIPBUILDING

The subcommittee met, pursuant to notice, at 2:38 p.m. in room SR–232, Russell Senate Office Building, Senator James M. Talent (chairman of the subcommittee) presiding.

Committee members present: Senators Talent, Collins, Lieberman, and Reed.

Majority staff member present: Sean G. Stackley, professional staff member.

Minority staff member present: Creighton Greene, professional staff member.

Staff assistants present: Micah H. Harris and Benjamin L. Rubin.

Committee members' assistants present: Mackenzie M. Eaglen, assistant to Senator Collins; Lindsey R. Neas, assistant to Senator Talent; Mieke Y. Eoyang, assistant to Senator Kennedy; and Frederick M. Downey, assistant to Senator Lieberman.

OPENING STATEMENT OF SENATOR JAMES M. TALENT, CHAIRMAN

Senator TALENT. We will convene the hearing. I know Senator Kennedy is deeply involved in the immigration debate and may not be able to come. If he is able to come, of course we will defer to him for his opening statement when he arrives, as is convenient for him.

The subcommittee meets today to receive testimony on the Navy shipbuilding program and the shipbuilding industrial base in review of the Department of Defense's (DOD) authorization request for fiscal year 2007.

We are pleased to have with us today Dr. Delores M. Etter, the Assistant Secretary of the Navy for Research, Development, and Acquisition. Welcome, Dr. Etter.

Dr. ETTER. Thank you.

Senator TALENT. Ms. Allison Stiller, who is the Deputy Assistant Secretary of the Navy for Ships. Welcome, Ms. Stiller.

Ms. STILLER. Thank you.

Senator TALENT. Rear Admiral Mark J. Edwards, the Director for Warfare Integration. Welcome again.

Admiral EDWARDS. Thank you.

Senator TALENT. Rear Admiral Samuel J. Locklear, who is the Director for Programming.

We will convene the second panel this afternoon with Damien Bloor of First Marine International, and John F. Schank of the RAND Corporation to discuss their respective studies regarding the shipbuilding industrial base. In my time as chairman of the subcommittee, I have had the opportunity to take aboard much testimony by the Navy on seapower matters. I have gained a great appreciation for the Navy's unique perspective on our national security. A perspective that has been born out through testimony and through time, that we are a maritime nation. The security of our Nation, the strength of our economy, the face of our diplomacy, and the course of our foreign policy have long been built upon the Navy's ability to maintain global presence and exercise freedom of maneuver upon the seas.

Our primacy as a naval power is virtually unchallenged today, due in large part to prudent decisions made in these rooms, 10, 15, and 20 years ago. That is the nature of shipbuilding; we have to take the longer view. Decisions regarding the fleet's capabilities for the distant future are before us today. When we consider requirements for the future fleet, we must be careful that we do not undervalue that most fundamental of capabilities—numbers of ships. To the extent that we forego the difficult decisions to invest in that capability, we place at risk our primacy as a maritime nation and all the security that that affords.

This time last year, the subcommittee expressed its extreme concern with the steady downward trends in the Navy shipbuilding program: reduced build rates, increased costs, a weakened industrial base, and the prospects of our Navy, which is currently at is smallest size in decades, ultimately falling well below 250 major combatants. Our concerns trace to the hard reality of those elements of our national military strategy which rely upon naval capability, whether engaged in the global war on terror or in major combat operations. We will certainly be challenged in regions of the world vital to our national interests, during the service lives of the ships whose keels we lay today.

The Chief of Naval Operations (CNO) has responded to our concerns and brought forward with the 2007 President's budget, the Navy's long-range shipbuilding plan, which calls for a future fleet of 313 ships. We will continue to work closely with the Navy to gain a full understanding of the requirements and capabilities called for in this plan.

The Navy's estimate to construct this force is on the order of $13.5 billion per year, which would represent a 50 percent increase above investments of the past 15 years. We are interested in hearing the Navy's plan to finance this investment and provide much needed budget stability.

Additionally, the CNO has highlighted that the affordability of this plan will be enhanced by tight control over requirement changes and emphasis on threshold capability for ships under con-

tract, that the Navy's expectation is that industry will respond to stabilize the program with efforts to reduce its costs.

I am interested and the subcommittee is interested in your insights regarding these cost control efforts in the Navy's initiatives to improve the affordability of the shipbuilding program, particularly in light of the notably higher shipbuilding estimates we have received from the Congressional Budget Office (CBO).

There are a number of new ship programs and new capabilities, either under construction or being introduced within the Future Years Defense Program (FYDP). The subcommittee is keenly interested in your progress bringing these programs forward: the next generation destroyer, the DD(X), the Littoral Combat Ship (LCS), the future aircraft carriers, CVN 21, and the Maritime Prepositioning Force or seabase ships. We look for greater clarity regarding your acquisition strategy for these ship programs, and your plan for managing risk, design, and production. As well, we continue to closely follow your progress on the more mature shipbuilding programs, the *Virginia* class submarine, and Amphibious Assault Ship programs, and listen for your recommendations regarding efficient procurement of these critical capabilities.

Finally, we must consider the effect of the shipbuilding plan on the overall health and viability of our strategic shipbuilding industrial base. We look for the Department's assessment of this important topic and will engage with our second panel to gain the benefits of their insights and recommendations in this regard.

Again, ladies and gentlemen, thank you for joining us today and we look forward to your testimony.

Senator Reed, if you have an opening statement or comments you would like to make, you can feel free.

Senator REED. Thank you, Mr. Chairman. No, I do not. I am interested in hearing the panel. Welcome, ladies and gentleman.

Senator TALENT. I understand that Secretary Etter and Admiral Edwards have opening statements, so we will start with Secretary Etter.

STATEMENT OF DR. DELORES M. ETTER, ASSISTANT SECRETARY OF THE NAVY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Dr. ETTER. Thank you, Mr. Chairman, distinguished members of the subcommittee, it is a privilege to appear before the Seapower Subcommittee to discuss the Department of the Navy ship construction programs and the fiscal year 2007 budget request. I would like to thank you for your personal support and the committee's great support for all Navy and Marine Corps programs.

I would like to submit our joint written statement for the record.

Senator TALENT. Without objection.

Dr. ETTER. There has been considerable activity within shipbuilding over the last year, and in fiscal year 2007 we will see the Navy's previous research and development (R&D) efforts begin to bear fruit. There are a variety of platforms and capabilities that will transform our fleet over the FYDP as we procure 51 new ships. To support that plan, we must align the industrial base for long-term force development through split funding, advance procurement, and cost saving initiatives. The Navy continues to analyze

operational requirements, ship designs and costs, acquisition plans, and industrial base capability to further improve its shipbuilding plan.

I would like to highlight the ships we propose procuring in fiscal year 2007. At the top of the list is DD(X), which is the centerpiece of a surface combatant family of ships that will deliver a broad range of capabilities. Since the award of the design agent contract in April 2002, the program has conducted extensive land-based and at-sea testing of the 10 critical engineering development models, and, as a result, is on track to mature these systems in time for ship installation. This level of technological maturity was a key fact in the Office of the Secretary of Defense's (OSD) granting Milestone B approval in November 2005. As you are aware, the Navy is proposing a dual lead ship acquisition strategy. The Navy is confident that this approach will motivate cooperative and collaborative completion of detail design, control costs on the lead ships, and allow a broader set of options for future acquisition strategy decisions. Our fiscal year 2007 budget request includes the first funding increment for two DD(X)s. The ship that I believe will prove to be transformational in terms of how we research, develop, and acquire capabilities is the LCS. This asset will bring much to the table in support of the uncertain security environment we operate in today and in the future.

LCS will be different from any warship that has been built for the U.S. Navy. Its modular design, built to open-systems architecture standards, will provide flexibility and a means to rapidly reconfigure mission modules and payloads. The program provides the best balance of risk, affordability, and speed of construction. The LCS program is on track and within the cost caps established by Congress. Our fiscal year 2007 budget requests include funding for two LCSs.

Our fiscal year 2007 budget request also includes funding for the ninth *Virginia* class submarine. This boat will be the fourth boat in the five boat multi-year procurement. The multi-year contracting approach provides the Navy with a savings of $80 million per boat. The Navy has proposed the first increment of split funding for the first amphibious assault ship replacement ship in fiscal year 2007. This ship is optimized to accommodate the future aviation combat element, which includes Joint Strike Fighter (JSF) and MV–22 aircraft. The Navy is also proposing procuring the 10th *Lewis & Clark* class auxiliary dry cargo and ammunition ship in fiscal year 2007. The first nine ships are under contract. The lead ship will deliver this spring. These ships will replace aging combat stores ammunition ships.

Before closing, I would like to share with you a few of my thoughts on acquisition program volatility, a term that I am using to articulate the complex set of challenges that lead to cost, schedule, and performance issues for acquisition programs.

Volatility, as defined by tending to vary often or widely, is fueled by five main factors in our acquisition programs; program complexity, requirements fluctuation, budget instability, schedule demands, and contractor and program manager optimism. These are the factors that are most likely to generate cost and schedule overruns and performance issues. I am actively working with my acqui-

sition team to take specific actions to reduce acquisition program volatility. I look forward to working with Congress to mitigate the acquisition program volatility during this and future fiscal years.

Mr. Chairman, I am grateful to the committee for the opportunity to discuss how the Department is working hard to change its approach to acquisition requirements and the delivery of the immense capability our shipbuilding programs bring to the Nation. These ships, submarines, and carriers are critical to the success of our missions in the global war on terrorism and to protect our country from the many threats it faces. Congressional support of the Navy shipbuilding program is essential to these capabilities. Thank you for your consideration. We look forward to the questions that you may have.

Senator TALENT. Thank you, Secretary Etter.

[The joint prepared statement of Dr. Etter, Ms. Stiller, Rear Admiral Edwards, and Rear Admiral Locklear follows:]

JOINT PREPARED STATEMENT BY DR. DELORES M. ETTER, ALLISON STILLER, RADM MARK J. EDWARDS, USN, AND RADM SAMUEL J. LOCKLEAR III, USN

INTRODUCTION

Mr. Chairman, distinguished members of the subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's (DON) fiscal year 2007 shipbuilding programs.

CURRENT OPERATIONS

We are a Nation at war. Today your Navy and Marine Corps team is postured worldwide, fighting the global war on terrorism, deterring aggression by would-be foes, preserving freedom of the seas, and promoting peace and security. As of March 1, 2006, 126 ships are underway (45 percent) of which 92 (33 percent) are forward deployed. Navy has 4,959 Reserves and the Marine Corps has over 7,000 Reserves on Active-Duty.

Today, marines remain committed to the prosecution of the global war on terrorism. Currently, there are over 35,000 marines forward deployed in support of regional combatant commanders. Their performance on the battlefield continues to validate their forward deployed posture, maneuver warfare doctrine, adaptive logistics backbone, the unique flexibility and scalability of the combined-arms Marine Air-Ground Task Force construct, and most importantly, their commitment to warfighting excellence as the world's foremost expeditionary warfighting organization.

The 25,000 sailors and marines under the command of I Marine Expeditionary Force (MEF) in Al Anbar Province, Iraq and those marines assigned to transition teams have made significant progress in their efforts to develop capable, credible Iraqi security forces. In setting the conditions for the historic constitutional referendum and national elections, they have also distinguished themselves in places like Fallujah, Ramadi, and the Euphrates River Valley. In Afghanistan, we have 1,200 sailors and marines providing support to the increasingly capable Afghan National Army. As part of Combined Joint Task Force-76 (CJTF–76), a Marine infantry battalion is conducting operations against the Taliban and anti-coalition militia in the northeastern portion of the country. Marine officers and senior enlisted leaders continue to train, mentor, and operate with their Afghan counterparts as part of Task Force Phoenix.

There are over 10,000 sailors serving ashore throughout the Central Command (CENTCOM) area of responsibility (AOR) including more than 4,000 in Iraq, and an additional 2,600 in Kuwait, that includes SEALs, Seabees, military police, explosive ordnance disposal, medical, intelligence, and civil affairs support personnel. Navy carrier and expeditionary strike groups continue to deploy in support of global war on terrorism and conduct combat operations in Iraq and Afghanistan. At the same time, the Navy and Marine Corps team conducted humanitarian assistance/disaster relief missions such as tsunami relief, Pakistani earthquake, and on our own Gulf Coast after Hurricanes Katrina and Rita. Naval forces in support of this effort consisted of 23 ships and a special purpose Marine Air-Ground Task Force (MAGTF) employing 2,500 marines, providing command and control, evacuation,

and humanitarian support to military and civilian personnel in affected regions. Additionally, 104 naval aircraft flew 1,103 sorties in support of search and rescue and other humanitarian assistance missions. These efforts resulted in the safe evacuation of 8,518 personnel and the rescue of an additional 1,582 people isolated by the disasters. In the weeks that followed, naval relief efforts provided a total of approximately 2.5 million pounds of food and water to people most severely affected by the disaster.

The fiscal year 2007 budget request maximizes our Nation's return on its investment by positioning us to meet today's challenges—from peacekeeping/stability operations to global war on terrorism operations and small-scale contingencies—and by transforming the force for future challenges.

PREPARED TODAY—PREPARING FOR TOMORROW

While the Navy and Marine Corps team is engaged in supporting the global war on terrorism, we also have a responsibility to prepare for future conflicts and contingencies. The Defense Department's Strategic Planning Guidance directs balanced capabilities for controlling four principal challenges: Traditional, Irregular, Catastrophic, and Disruptive. Our challenge is to determine the right balance of those capabilities that the Navy and Marine Corps team must provide to meet challenges across the operational spectrum.

The enemy we are fighting today is different than those in our recent past. He is a transnational actor with no allegiance to sovereign nations or respect to conventional rules of war. He can strike us at will from markedly unforeseen directions. He will go to any length to inflict harm on America's people and damage to her soil. A different enemy requires different forms of warfighting capability, a capability based on military forces increasingly capable of operating independently in area denial and anti access environments without benefit of allied and/or host nation support. We must be able to maintain global presence with an increased relevance of the sea. Therefore, our ships will have more relevance operating under a variety of uses, all the while, maintaining ability to mass and conduct large-scale operations if required.

America's ability to use international seas and waterways, as both maneuver space and an operating base unconstrained by foreign veto, allows our naval forces to project combat power into the littoral regions, which contain more than half the world's population and more than 75 percent of its major urban areas. Highly mobile and ready for combat, our forward-deployed expeditionary forces are critical instruments of U.S. diplomacy and central components of joint military force packages designed to quickly contain a crisis or defeat an emerging threat.

The Navy and Marine Corps team of the future must be capabilities-based and threat-oriented. The United States needs an agile, adaptable, persistent, lethal, surge-ready force. The Navy and Marine Corps team must seek to identify the proper strategic balance of capabilities to ensure we have the agility, speed, flexibility, and lethality to respond to any threat from any adversary, whether that threat is conventional or asymmetric in nature. Through agility and persistence, our Navy and Marine Corps team must be poised to fight irregular warfare against a "thinking enemy," able to act immediately against a fleeting target. The challenge is to simultaneously set the conditions for a major combat operation (MCO) while continuing to fight the global war on terrorism, with the understanding that the capabilities required for the global war on terrorism cannot necessarily be assumed to be a lesser-included case of an MCO. Our force must be the right mix of capabilities that balances persistence and agility with power and speed in order to fight the global war on terrorism while being prepared to win an MCO. To do so, it must be properly postured in terms of greater operational availability from platforms that are much more capable as a distributed, networked force. While the fabric of our fighting force will still be the power and speed needed to seize the initiative and swiftly defeat any regional threat, FORCEnet's pervasive awareness via command, control, communication, computer, intelligence, surveillance, and reconnaissance (C^4ISR) will enable us to achieve essential effects with less mass. Because of its access from the sea, the Navy and Marine Corps are focusing significant effort and analysis in support of joint combat power projection by leveraging the maneuver space of the oceans through Seabasing.

SEABASING—A NATIONAL CAPABILITY

The Naval Power 21 vision defines the capabilities that the 21st Century Navy and Marine Corps team will deliver. Our overarching transformational operating concept is Seabasing; a national capability, for projecting and sustaining naval power and joint forces that assures joint access by leveraging the operational ma-

neuver of sovereign, distributed, and networked forces operating globally from the sea. Seabasing unifies our capabilities for projecting offensive power, defensive power, command and control, mobility, and sustainment around the world. It will enable commanders to generate high tempo operational maneuver by making use of the sea as a means of gaining and maintaining advantage.

The war against the Taliban and al Qaeda in Afghanistan provided a harsh dose of reality for those who assumed traditional threats and the availability of friendly, convenient land bases to project airpower and land forces. In the early phases of Operation Enduring Freedom (OEF), two forward-deployed marine expeditionary units formed Task Force 58 and projected the first major U.S. "conventional" combat units into Afghanistan—more than 350 miles from its seabase of amphibious shipping. Yet, their operations were far from traditional or conventional expectations. We believe these recent experiences such as the prohibition of the 4th Infantry Division using Turkey in the early stages of Operation Iraqi Freedom (OIF) are compelling insights on how operations can be conducted in the future. As anti-access, military and political measures proliferate; even friendly nations may deny U.S. forces land basing and transit due to their own sovereign interests.

Seabasing represents a complex capability, a system-of-systems able to move at will. Seabasing, enabled by joint integrated and operational concepts, is the employment of ships and vessels with organic strike fires and defensive shields of sensors and weapons, strike and transport aircraft, communications, and logistics. We will use the sea as maneuver space to create uncertainty for adversaries and protect the joint force while receiving, staging, and integrating scalable forces, at sea, that are capable of a broad range of missions. Its inherent freedom of movement, appropriate scalability, and sustainable persistent power provides full spectrum capabilities, from support of theater engagement strategies, to rapid response to natural or man made disasters, to MCOs from raids, to swift defeat of enemies, to scale of major combat and decisive operations. In order to achieve this capability, the Navy and Marine Corps must be forward based, forward deployed (on naval shipping), and forward engaged to maintain global presence as addressed in the 2006 Quadrennial Defense Review (QDR) to meet these challenges.

The Seabased Navy will be distributed, netted, immediately employable and rapidly deployable, greatly increasing its operational availability through innovative concepts such as, for example, Sea Swap (where deemed appropriate) and the Fleet Response Plan (FRP). At the same time, innovative transformational platforms under development such as Maritime Prepositioning Force (Future) (MPF(F)), LHA(R), and high-speed connectors, will be instrumental to the Sea Base.

The FRP is the maintenance, training, and operational framework through which the Navy meets global combatant commander demand signals for traditional (e.g., global war on terrorism, major combat operations, humanitarian assistance/disaster relief, shaping and stability operations, counter piracy, etc.) and emerging mission sets (e.g., riverine warfare, Navy Expeditionary Combat Command (NECC), medical outreach). The FRP is mission-driven, capabilities-based, and provides the right readiness at the right time (within fiscal constraints). It enables responsive and dependable forward presence. With the FRP we can deploy a more agile, flexible, and scalable naval force capable of surging quickly to deal with unexpected threats, humanitarian disasters, and contingency operations. Sea Swap is an initiative designed to keep a single hull continuously deployed in a given theater, replacing the entire crew at 6-month intervals. The primary objective is to effectively and efficiently increase forward naval presence without increasing operating cost.

SEAPOWER 21

We developed the Sea Power 21 vision in support of our National Military Strategy. The objective of Sea Power 21 is to ensure this nation possesses credible combat capability on scene to promote regional stability, to deter aggression throughout the world, to assure the access of joint forces and to fight and win should deterrence fail. Sea Power 21 guides the Navy's transformation from a threat—based platform centric structure to a capabilities-based, fully integrated force. The pillars of Sea Power 21—Sea Strike, Sea Shield, and Seabasing—are integrated by FORCEnet which will be the means by which the power of sensors, networks, weapons, warriors and platforms are harnessed in a networked combat force. This networked force will provide the strategic agility and persistence necessary to prevail in the continuing global war on terrorism, as well as the speed and overwhelming power to seize the initiative and swiftly defeat any regional peer competitor in MCOs. Extending FORCEnet to our allies and partners in the form of multinational information sharing networks will represent an unprecedented level of interoperability for both global war on terrorism and MCO. The immeasurable advantage of this effort

is the effective association of a "1,000-ship Navy" built from our own core capabilities combined with the coordinated efforts of our allies and partners in today's challenging global environment. During the last year, the Chief of Naval Operations (CNO) established a focused effort to clearly define naval force structure requirements. The Navy recently submitted to Congress its 2007 Annual Long Range Plan for Construction of Naval Vessels. This plan begins our movement toward a more balanced force that meets the future national security requirements outlined in the fiscal year 2006 QDR with acceptable risk and is designed to replenish the fleet, while stabilizing workload and funding requirements. As this 30 year shipbuilding plan evolves over the next year, it will produce an investment plan that is both executable and affordable based on balancing several factors: Naval force operational capability; risk; and, the ability of the shipbuilding industrial base to execute the plan.

FISCAL YEAR 2006 QUADRENNIAL DEFENSE REVIEW (QDR 06)

The fiscal and temporal realities associated with the design and development of modern, sophisticated weapons systems requires a significantly different approach to procurement and operation of or forces and resources. It is this dynamic that is propelling the Navy forward in the transformational arena. As recognized in QDR 06, the size and capabilities of our force are driven by the challenges we will face. The capacity of the force is determined by its global posture in peacetime and the requirement to respond from this posture, as well as to surge, in crisis. In the case of our Navy, it is based upon the need for a ubiquitous but carefully tailored maritime presence that can provide our President and our allies with strategic options in support of dynamic security requirements. QDR 06 developed guidance to achieve the national defense and national military strategies and shaping the future force to improve capabilities and expand capacity to address four priorities:

- Defeat Terrorist Extremists;
- Defending the Homeland in Depth;
- Shaping the Choices of Countries at Strategic Crossroads; and
- Preventing Hostile State and Non-state Actors from Acquiring or Using Weapons of Mass Destruction.

QDR 06 sets a 20-year course for the Department of Defense (DOD) and provides an opportunity to continue to reshape the U.S. Armed Forces to meet current and emerging security responsibilities. The QDR 06 construct places new emphasis on the unique operational demands associated with homeland defense and the global war on terrorism, shifts focus from optimizing for conflicts in two particular regions to building a portfolio of capabilities with global reach and serves as a bridge from today's threat-based force to a future capabilities-based transformational force.

FORCE STRUCTURE

Force structure requirements were developed and validated through detailed joint campaign and mission level analysis, optimized through innovative sourcing initiatives (FRP, Sea Swap, forward posturing) that increase platform operational availability, and balanced with shipbuilding industrial base requirements. This force structure was developed using a capabilities-based approach measured against the anticipated threats for the fiscal year 2020 timeframe. The future Navy will remain sea based, with global speed and persistence provided by forward deployed forces, supplemented by rapidly deployable forces through the FRP. To maximize return on investment, the Navy that fights the global war on terrorism and executes maritime security operations will be complementary to the Navy required to fight and win in any MCO. This capabilities-based, threat-oriented Navy can be disaggregated and distributed world wide to support combatant commander global war on terrorism demands. The resulting distributed and netted force, working in conjunction with our joint and maritime partners, will provide both actionable intelligence through persistent, maritime domain awareness, and the ability to take action where and when a threat is identified. The same force can be rapidly aggregated to provide the strength needed to defeat any potential adversary in an MCO. The warships represented by this shipbuilding plan will sustain operations in forward areas longer, be able to respond more quickly to emerging contingencies, and generate more sorties and simultaneous attacks against greater numbers of targets and with greater effect than our current fleet.

Employing a capabilities-based approach to calculate the size and composition of the future force required to meet expected joint force demands in peace and in the most stressing construct of the Defense Planning Guidance, along with detailed assessments of risk associated with affordability and instabilities in the industrial base, the analysis concluded that a fleet of about 313 ships is the minimum force

necessary to meet all the demands, and to pace the most advanced technological challengers well into the future, with an acceptable level of risk.

THIRTY-YEAR NAVAL FORCE SIZE

The 30-year shipbuilding plan and the resulting ship inventory, as outlined in the fiscal year 2007 Annual Long-Range Plan for Construction of Naval Vessels, represent the baseline as reflected in the 2007 President's budget submission. There will be subsequent studies and analyses that will continue to balance affordability with capability and industrial base capacity. As part of the fiscal year 2008 budget development process, the Navy will be exploring alternative approaches to attaining the future force structure and ship mix while retaining the necessary capabilities for joint force operations. Overall, this plan reflects the Navy's commitment to stabilize the demand signal to the industrial base while still achieving the appropriate balance of affordability and capability in all ship classes. Also, although there is risk with this plan, and not a lot of excess capacity to accommodate the unforeseen, we believe the risk is moderate and manageable. Areas of special interest include:

Carriers

Eleven aircraft carriers and their associated air wings are needed to ensure our ability to provide coverage in any foreseeable contingency and do so with meaningful, persistent combat power. While the Navy requirement for carriers remains a minimum of 11 operational vessels, past delays in beginning the CVN 21 program will result in the Navy's having only 10 operational carriers in fiscal year 2013 and fiscal year 2014. This shortfall will require some combination of shorter turn-around times between deployments, higher operational tempo (OPTEMPO) and personnel tempo (PERSTEMPO), and restructured carrier maintenance cycles.

Nuclear Attack Submarines (SSN)

A SSN force of 48 boats is needed to meet submarine tasking in support of Homeland defense, global war on terrorism/irregular warfare, and conventional campaigns. However, total SSN numbers will drop below 48 between 2020 and 2034. Our remaining fast attack submarine force will require a combination of shorter turn-around times between deployments, higher OPTEMPO and PERSTEMPO, and restructured maintenance cycles to mitigate the impact of this force structure shortfall. Navy is also pursuing a number of cost reduction initiatives intended to lower SSN 774 acquisition costs to $2.0 billion (fiscal year 2005 dollars) at a stable build rate of two-per-year commencing with fiscal year 2012 as cited in QDR 06.

Amphibious Ships

Our amphibious capability provides the joint forcible entry capacity necessary to support the sea base as a lodgment point for joint operations. The current DOD force-sizing construct requires the capability to respond to two major "swiftly defeat the efforts" events—each of which could require a minimum of 15 capable amphibious ships. One of these crises may further necessitate the use of a MEF, thus requiring a total of 30 operationally available amphibious ships. The Marine Corps aviation combat element requires 10 large-deck amphibious ships to support a MEF. Today's 35 amphibious warships can surge the required 30 operationally available warships and provide the peacetime rotation base for Marine Expeditionary Units in up to three regions. As a Navy and Marine Corps team, we are striving to maintain the capability to project two Marine Expeditionary Brigades assault echelons in support of the combatant commander.

SHIPBUILDING PROGRAMS

There has been considerable activity within shipbuilding over the last year. Currently, there are 37 naval ships under construction in the United States: 1 CVN, 13 DDGs, 1 LHD, 4 LPDs, 9 T-AKEs, 2 Littoral Combat Ships (LCS) and 7 *Virginia* class submarines. Four additional LPDs have ongoing contract negotiations. In 2005 the Department delivered the lead ship for our newest class of Amphibious Transport Dock Ships U.S.S. *San Antonio,* LPD 17, initiating a new era of amphibious assault capabilities that are aligned to the littoral regions. In January 2006, the Navy commissioned the LPD 17. The Navy also commissioned three DDGs in 2005. We also laid the keel for the eighth ship of the LHD class, the second and third *Lewis & Clark* Auxiliary Dry Cargo & Ammunition ship (T-AKE), and the third *Virginia* class submarine. In 2005, the Navy completed the engineered refueling overhaul (ERO) and conversion of the U.S.S. *Ohio* (SSGN 726) the first SSGN and redelivered the submarine to the fleet in February 2006. In March 2005, the Navy also completed the Refueling Complex Overhaul (RCOH) of CVN 69.

Fiscal year 2007 will see the Navy's previous research and development (R&D) efforts begin to bear fruit. The first increment of procurement of the lead two DD(X) destroyers is programmed. Follow-on LCSs are programmed, which will accelerate the Navy's capabilities to defeat anti-access threats close to shore. Transformation is most apparent in fiscal year 2007 where new construction increases to seven ships from the four in President's fiscal year 2006 budget request. The total number of new ships procured over the Future Years Defense Program is 51, averaging 10 ships per year including DD(X), CG(X), LCS, T-AKE, *Virginia* class SSN, CVN 21, MPF(F) family of ships, LPD 17, JHSV, and LHA(R). Our fiscal year 2007 budget request calls for construction of seven ships: two *Zumwalt* class (DD(X)) destroyers, one *Virginia* class submarine; one *Lewis & Clark* (T-AKE) Class Auxiliary Dry Cargo & Ammunition ship; the LHA 6 Amphibious Assault Ship; and two LCS. In addition, we have requested funding for advance procurement of the 10th and 11th *Virginia* class submarines, the ninth *San Antonio* class Amphibious Transport Dock ship, and the CVN 21. Modernization efforts to be funded in fiscal year 2007 include the second increment of the split funded CVN 70 RCOH, the second year of advance procurement for CVN 71 RCOH, ERO of an SSBN, modernization of *Ticonderoga* class cruisers and *Arleigh Burke* class destroyers, and the service life extension for six Landing Craft Air Cushion (LCAC).

A stable shipbuilding industry is essential to sustain minimum employment levels and retain critical skills to meet our requirements for an affordable and capable force structure. We must align the industrial base for long-term force development through split funding, advanced procurement, and cost savings incentives. We must build ships more efficiently, cost effectively, and quickly. To do this, we are committed to help provide stability in the shipbuilding plan and rigorously control requirements. Costs and production schedules must be kept within contractual limits. Industry must be viewed as a trusted partner while we provide a stable baseline upon which to plan.

The Navy continues to analyze operational requirements, ship designs and costs, acquisition plans and tools, and industrial base capacity to further improve its shipbuilding plan. Full funding and support for execution of this plan is crucial to transforming the U.S. Navy to a force tuned to the 21st century and its evolving requirements.

DD(X) Destroyer

DD(X) is the centerpiece of a surface combatant family of ships that will deliver a broad range of capabilities. It is already providing the baseline for spiral development of technology and engineering to support a range of future ship classes such as LHA(R) and CVN 21. This advanced multi-mission destroyer will bring revolutionary improvements to precise time-critical strike and joint fires for our expeditionary and carrier strike groups of the future. It expands the battlespace by over 400 percent; has the radar cross section of a fishing boat; and is as quiet as a *Los Angeles* class submarine. DD(X) will also enable the transformation of our operations ashore. Its on-demand, persistent, time-critical strike revolutionizes our joint fire support and ground maneuver concepts of operation so that our strike fighter aircraft are freed for more difficult targets at greater ranges. DD(X) will provide credible forward presence while operating independently or as an integral part of naval, joint, or combined expeditionary forces. DD(X) has made tremendous progress in technological maturity. The 10 critical engineering development models (EDMs) provide high confidence in our ability to build the lead DD(X). Since the award of the DD(X) Design Agent contract in April 2002, the DD(X) Program has conducted extensive land-based and/or at-sea testing of the EDMs. As a result of these efforts, the DD(X) program has demonstrated fundamental capabilities prior to ship construction contract award, completed necessary testing to support a successful ship critical design review (CDR) this past fall, and is on track to mature systems in time for ship installation. This level of technological maturity was a key factor in the Office of the Secretary of Defense's (OSD) granting of Milestone B approval in November 2005.

The fiscal year 2007 budget request includes $794 million in research, development, test, and evaluation, Navy (RDT&E,N) for continued software development and $2.6 billion in ship construction, Navy (SCN) for the first increment of the first and second DD(X). While the funding strategy for these ships is unique, the reasons for supporting a dual lead ship approach are compelling.

Based on congressional direction that prohibits a winner-take-all strategy, the Navy has consulted with industry, OSD, and Congress to chart our way forward for the DD(X) program. Our key objectives are:

- Acquire the DD(X) class destroyers in as cost effective a manner as possible;

- Create pressures to control and reduce cost;
- Acquire these ships on a timeline that meets the warfighters' needs;
- Lower overall risk in the program;
- Treat each of our industry partners fairly; and
- Preserve a viable industrial capability for complex surface combatants.

In order to accomplish these objectives, the Navy has defined a new way ahead: "Dual Lead Ships". This effort tries to create a strong, mutually dependent partnership between the shipyards and the Navy to reduce cost and improve collaboration. Importantly, the Navy's new strategy fully addresses industry's key issues and responds to congressional concerns. The key features are:

- Sole source lead ship detail design and construction contracts with the shipbuilders;
- Equal split of common detail design with each yard doing their respective production design;
- Shipyards procure electronics, ordnance, and integrated power system (IPS) from system developers as contractor-furnished equipment;
- Funding phased to synchronize start of fabrication dates in both shipyards;
- Importantly, the shipyards are mutually dependent on each other to urgently and cooperatively complete the DD(X) detail design;
- Sole source contracts to software and system developers;
- Transition to production of systems culminating in production readiness reviews;
- Complete software releases and provide to shipyards as Government-furnished information;
- Importantly, this approach lowers the cost to the Navy by avoiding incremental pass through fee costs; and
- Keep open the option for allocated procurement or various competitions in fiscal year 2009 and beyond.

Navy is confident that the dual lead ship strategy is the acquisition approach that will motivate cooperative and collaborative completion of detail design. Further, being able to benchmark the lead ships against each other provides an unprecedented pressure and opportunity to control cost on the lead ships. Finally, because each builder will have completed significant construction on sections of the ships and will have completed detail design, the Navy will have information and options for future acquisition strategy decisions.

Virginia (SSN 774) Class Attack Submarine

The fiscal year 2007 budget request includes $1.8 billion for the 9th ship, and $677 million for advance procurement for the 10th and 11th ships of the *Virginia* class. A total of 10 *Virginia* class submarines are under contract. The first ship, U.S.S. *Virginia* (SSN 774), was delivered in October 2004, conducted its first deployment in 2005 and is currently undergoing post shakedown availability. This year's ship will be the fourth ship in the five-ship multi-year procurement (MYP). This MYP contracting approach provides the Navy savings of approximately $80 million per ship for a total savings of $400 million compared to "block buy" procurement. These ships currently continue to be built under the teaming approach directed by Congress in 1998, which maintains two nuclear submarine shipbuilders.

Lewis and Clark Class Auxiliary Dry Cargo & Ammunition Ship (T–AKE)

The fiscal year 2007 budget request includes $455 million for the 10th ship. The first nine ships are under contract. Lead ship construction commenced in September 2003, with christening in May 2005. Projected delivery date of the lead ship is spring 2006. Projected delivery dates for the other ships are as follows: second, third, and fourth ships in fiscal year 2007; fifth, sixth, and seventh ships in fiscal year 2008 and the eighth ship in fiscal year 2009. Exercise of the option for the ninth ship occurred January 2006. The T–AKE is designed to replace aging combat stores (T–AFS) and ammunition (T–AE) shuttle ships. Working in concert with an oiler (T–AO), the team can perform a "substitute" station ship mission to allow the retirement of four fast combat support ships (AOE 1 class).

LHA(R)

The fiscal year 2007 budget requests $1.1 billion for the LHA 6, the lead LHA(R). LHA(R) is the replacement program for the aging LHA class ships that reach the end of their administratively extended service life between 2011 and 2015. LHA(R) is a modified LHD 1 class variant with enhanced aviation capabilities specifically designed to accommodate Marine Corps Joint Strike Fighter (JSF) and MV–22 aircraft of the future aviation combat element. LHA(R) also provides the improved

service life that will accommodate the 21st century evolution of Marine Corps aviation. The program received Milestone B approval in January 2006 to award the detail design and construction contract for the first ship of the class. Ship delivery is scheduled for fiscal year 2012.

Littoral Combat Ship (LCS)

LCS is being built from the keel up to be a part of a netted and distributed force. The key warfighting capability of LCS is its off-board systems: manned helicopters and unmanned aerial, surface and underwater vehicles. It is the off-board vehicles—with both sensors and weapons—that will enter the highest threat areas. Its modular design, built to open-systems architecture standards, provides flexibility and a means to rapidly reconfigure mission modules and payloads. Approximately 40 percent of LCS's payload volume will be reconfigurable. As technology matures, the Navy will not have to buy a new LCS seaframe, but will upgrade the mission modules or the unmanned systems. LCS will be different from any warship that has been built for the U.S. Navy. The program provides the best balance of risk with affordability and speed of construction. We have partnered with the Coast Guard and LCS shares a common three-dimensional radar with U.S. Coast Guard cutters. In addition, there are other nations interested in purchasing the seaframe.

Two contracts were competitively awarded in May 2004, for detail design and construction of two different LCS seaframes. The construction is currently underway on the first seaframe of each design. The Navy is very pleased with the capabilities these two seaframes will bring. A recent validation of the seaframe capability development document (CDD) showed that these seaframes will not require major modifications to provide the required capabilities envisioned for this platform. To date, all milestones have been met on schedule. Two LCS seaframes are requested in fiscal year 2007. The LCS spiral development acquisition strategy will support construction of focused mission ships and mission packages with progressive capability improvements. Procurement of one Mine Warfare and one Surface Warfare mission packages is planned in fiscal year 2007. The Department is well positioned to proceed with LCS and deliver this needed capability to sailors as soon as possible.

CVN 21 Class

The CVN 21 program is designing the future aircraft carrier for the 21st century, as the replacement for today's aircraft carriers, including the *Nimitz* class. The design provides significant improvements in capability along with total ownership cost reductions of over $5 billion per ship as compared to the *Nimitz* class. Overall, CVN 21 will increase sortie generation rate and improve survivability to better handle future threats. The new design nuclear propulsion plant and improved electric plant together provide nearly three times the electrical generation capacity of a *Nimitz* class carrier. This additional capacity allows for the introduction of new systems such as Electromagnetic Aircraft Launching System, Advanced Arresting Gear, and a new integrated warfare system that will leverage advances in open systems architecture to be affordably upgraded. Other features include an enhanced flight deck, improved weapons handling and aircraft servicing efficiency, and a flexible command and decision center allowing for future technology insertion. The fiscal year 2007 budget request includes $784 million of advance procurement for continued design, material procurement and advance construction. The Navy plan is to award the construction contract in fiscal year 2008.

Nimitz Class Aircraft Carrier (CVN 68 Class)

The RCOH program refuels, repairs, and modernizes *Nimitz* class aircraft carriers to provide up to 50 total years of service life. CVN 68 class was originally based on a 30-year design life with refueling at an estimated 14 years. Ongoing analysis of the reactor cores show a nominal 23 year life prior to requirement to refuel allowing the RCOH schedule to be adjusted accordingly. The RCOH program recapitalizes these ships in lieu of procurement and is fundamental to sustaining the nuclear carrier force structure to meet current and future threats. RCOHs provide a bridge between maintaining current readiness requirements and preparing the platform for future readiness initiatives in support of Sea Power 21. They leverage technologies from other programs and platforms for insertion during this major recapitalization effort.

The fiscal year 2007 budget request includes $954 million in the second of two funding increments for the U.S.S. *Carl Vinson* (CVN 70) RCOH execution. The fiscal year 2007 budget also includes $117 million in advance procurement funding for the U.S.S. *Theodore Roosevelt* (CVN 71) RCOH scheduled to start fiscal year 2010.

SSGN Conversions and Engineered Refueling Overhauls

SSGN converted submarines will provide transformational warfighting capability carrying up to 154 Tomahawk cruise missiles and supporting deployed special operating forces. The SSGN conversions are being executed utilizing a public-private partnership, conducting the work in naval shipyards. The first SSGN, U.S.S. *Ohio* (SSGN 726), took about 3 years to deliver from its production decision date. U.S.S. *Ohio* (SSGN 726) was delivered to the fleet in February 2006. U.S.S. *Florida* (SSGN 728) will be delivered in April 2006. The U.S.S. *Michigan* (SSGN 727) will be delivered December 2006 and the U.S.S. *Georgia* (SSGN 729) will be delivered in September 2007.

SSBN Engineered Refueling Overhauls (EROs)

In fiscal year 2007, the U.S.S. *Alaska* (SSBN 732) will begin its ERO at Norfolk Naval Shipyard. The fiscal year 2007 budget requests advance procurement funding for long lead time materials to support future EROs in 2008 and 2009. Continued support of these maintenance efforts will sustain our strategic deterrents well into the future.

Submarine Technology Development and Insertion

The Navy's submarine technology development efforts focus simultaneously on cost reduction and closure of warfighting gaps. Advanced submarine system development (ASSD) develops and demonstrates the most promising technologies including enablers for lower submarine acquisition and operation costs. Technologies in this line have applicability to all submarine platforms. The Navy is increasing the capabilities of the *Virginia* class through the insertion of appropriate advanced technology via two parallel approaches. The first approach is to procure major improvements through block buys as the most economical and efficient. The second approach for systems such as acoustic, tactical, and weapons systems is to make improvements through software updates under the applicable advanced processing build (APB) process.

The Navy plans to introduce future major *Virginia* improvements in successive contract blocks provided they reduce acquisition cost and maintain tactical performance. The next contract block ship improvement opportunity will be the fiscal years 2009–2013 authorized ships. Major efforts under advanced submarine systems development include the joint Navy/DARPA Technology Barrier (Tango Bravo) Program to overcome selected technological barriers and enable design options for a reduced-cost submarine. Additional efforts include sonar/combat systems (e.g. advanced processing builds (APB) that transition to acoustic rapid commercial off-the-shelf (COTS) insertion), universal encapsulation for submarine launch of joint force weapons and sensors, hull and deployable sensor arrays, stealth components and systems, and composite structural materials (*Virginia* class advanced sail).

Arleigh Burke (DDG 51) Class Destroyer

The fiscal year 2007 budget request includes $356 million to continue funding program completion and shutdown costs. The Navy submitted a report to Congress detailing program completion requirements in November 2005, pursuant to the Fiscal Year 2006 Senate Appropriations Committee Report 109–141. The fiscal year 2007 budget request is consistent with this report and is essential to complete delivery of these mission capable ships. All 62 ships are under contract and the final ship will deliver in fiscal year 2011.

DDG Modernization

The fiscal year 2007 budget request includes $16 million in RDT&E,N and OPN appropriations to continue the process to bring needed mid-life DDG modernization enhancements to the mainstay of our surface fleet. The DDG Modernization Program will ensure that each ship in the class remains an affordable and viable warfighting asset throughout the entire projected 35-year service life. It is designed to reduce total ownership costs across the entire class through significant reductions in manning requirements and the application of technology to achieve improved quality of life for sailors, increased survivability, and improved maintainability. DDG 51 is scheduled to be the first legacy destroyer to receive the modernization upgrade in fiscal year 2010.

Ticonderoga (CG 47) Cruiser Modernization Plan

The fiscal year 2007 budget request includes $359 million across multiple appropriations to procure long lead time material for the modernization of *Ticonderoga* class cruisers occurring in fiscal years 2008 and 2009. The guided missile modernization program was restructured in fiscal year 2006 in accordance with congressional direction. Under the restructured plan, the older Baseline 2 and 3 ships will

be modernized first. Funding began in fiscal year 2006 for long lead-time procurements for a fiscal year 2008 Baseline 2 modernization availability of U.S.S. *Bunker Hill* (CG 52). The Navy's plan will permit these ships to realize their expected service life of 35 years and substantially increase combat capability of all remaining 22 CG 47 class ships. This modernization will reduce combat system and computer maintenance costs, replace obsolete combat systems, and extend mission relevance. It will also incorporate manpower improvements and quality of service enhancements from the smart-ship program.

LPD 17

The *San Antonio* (LPD 17) class of amphibious transport dock ships is optimized for operational flexibility and designed to meet Marine Air-Ground Task Force lift requirements and represents a critical element of the Navy and Marine Corps future in expeditionary warfare. The fiscal year 2007 budget includes $297 million of advanced procurement for the ninth ship of the class. The Navy plans to procure the ninth ship in fiscal year 2008. The lead ship was delivered in July 2005, and commissioned in January 2006. Four follow on ships are currently under construction. *New Orleans,* LPD 18 was christened on November 20, 2004, and *Mesa Verde,* LPD 19 was christened January 15, 2005. Construction also continues on *Green Bay,* LPD 20 and *New York,* LPD 21. Advance procurement contracts for LPD 22 and 23 have been awarded to support long-lead time material purchases for these ships. LPDs 22–25 are in negotiation.

Maritime Prepositioning Force (Future)

In addition to the 30 operationally available amphibious ships needed to employ a MEF during a forcible entry operation, the Maritime Prepositioning Force (Future) (MPF(F)) is the key enabler for Seabasing, providing support and sustainment for early entry Marine Expeditionary Brigade (MEB). MPF(F) enables four new capabilities: (1) at-sea arrival and assembly of the Sea Base echelon (of the MEB); (2) projection of one surface and one vertical battalion landing team in one 8–10 hour period of darkness; (3) long-term, sea-based sustainment; and (4) at-sea reconstitution and redeployment.

These capabilities will be invaluable in supporting joint forcible entry operations, forward engagement, presence, and relationship building operations with allies and potential coalition partners by our forward deployed forces, as well as support of disaster relief and humanitarian operations. Additionally, this flexible asset can remain in support of post-conflict activities and forces ashore from a relatively secure location at sea.

These future maritime prepositioning ships will serve a broader operational function than current prepositioning ships, creating greatly expanded operational flexibility and effectiveness. We envision a force that will enhance the responsiveness of the joint team by the at-sea assembly of a MEB that arrives by high-speed airlift or sealift from the United States or forward operating locations or bases. The MPF(F) squadrons will be capable of the "selective offload" of equipment and supplies, which will permit our force commanders to tailor mission packages to satisfy specific mission requirements. As a part of the Sea Base, MPF(F) will provide the ability to accomplish force closure and move equipment and troops ashore as a rapid response asset, interoperate with other ships in the Sea Base, provide sustainment to expeditionary forces ashore, and permit recovery and reconstitution of forces and equipment at-sea. As our shipbuilding programs and technology further mature, thorough experimentation is essential in order to provide informed decisions prior to long term commitments in the development of the MPF(F). Examples of planned experimentation include: interaction with the MPF maintenance cycle (MMC) to develop selective offload capability, at sea large medium-speed roll-on/roll-off (LMSR) ship equipment off-load/on-load, and R&D teams to continue to explore safe and efficient ways for at-sea cargo and passenger transfers by testing fendering (skin-to-skin) technologies, motion compensating cranes and ship to ship interface systems.

The MPF(F) squadron will be comprised of two LHA replacement large-deck amphibious ships, one LHD large-deck amphibious ship, three T-AKE cargo ships, three LMSR cargo ships, three mobile landing platform ships with troops, and two legacy "dense-pack" MPF ships taken from existing squadrons. The mobile landing platforms, the only new-design ships in the plan, will be based on current technology. This mix of ships will be capable of prepositioning critical equipment and 20 days of supplies for our future MEB.

The future MPF(F) squadron will be part of the transformational seabasing capability as defined in the Seabasing Joint Integrating Concept and will provide the key capability of a rapid response force of a 2015 MEB in support of the 1–4–2–1 strategy. MPF(F) with its associated aircraft, personnel, logistic chains, and surface and

air connectors will provide rapid force closure and support forcible entry through at-sea arrival and assembly and force employment from the seabase. In addition, it will replace current aging maritime prepositioning ship (MPS) capability.

The fiscal year 2007 budget request includes $86 million of national defense sealift R&D funds to develop technologies to support future sea basing needs in MPF(F). The first MPF(F) ships are planned for fiscal year 2009 with advanced funding scheduled in fiscal year 2008. The proposed family of ships solution is a low cost, low risk solution for meeting the MPF(F) requirements. The solution leverages existing ship designs to control risk while allowing for broad participation of the industrial base.

Joint High Speed Vessel

The Navy High Speed Connector has been merged with the Army Theater Support Vessel to form the Joint High Speed Vessel (JHSV) program. This program will provide a high-speed intra-theater surface lift capability gap identified to implement Sea Power 21 and the Army Future Force operational concepts. The JHSV will be capable of supporting joint force needs for flexible, fast transport of troops and equipment for the future. Today's only alternative to meeting this gap is through the leasing of high-speed vessels for rapid troop and equipment transport. The WestPac Express is a high-speed surface vessel currently being leased by the Military Sealift Command and used to transport marines in the Western Pacific operating area. With the Navy designated as the lead Service, the Navy, Marine Corps, and Army are working together to develop the required documentation to meet a Milestone A decision in April 2006 with a lead ship contract award planned for fiscal year 2008. The fiscal year 2007 budget request includes $14.2 million for concept studies and development of contract design.

Landing Craft Air Cushion (LCAC) Service Life Extension Program

Our fleet LCACs saw continued increased operational tempo supporting worldwide operations during the past year, underscoring the need for the LCAC Service Life Extension Program (SLEP). LCAC SLEP is a vital, ongoing effort to Operational Maneuver From The Sea and Ship To Objective Maneuver options for the naval forces. This will provide continued critical surface lift for the Marine Corps for the future as these upgrades offer greater flexibility and endurance options that allow naval forces to continue to remain expeditionary and versatile in support of global war on terrorism and into the future. The program, designed to extend the service life of LCACs to 30 years, had several notable accomplishments during the past year: LCAC 7, LCAC 8, and LCAC 9 delivered ahead of schedule; and the SLEP crafts, LCAC 8 and LCAC 9, rendered assistance to the hurricane recovery effort on the Gulf Coast. The Navy is continuing the strategy of refurbishing vice replacing the buoyancy boxes and will competitively select the fiscal year 2006 and fiscal year 2007 SLEP work. The fiscal year 2007 budget request includes $111 million for SLEP of six craft.

COMPLETION OF PRIOR YEAR SHIPBUILDING CONTRACTS

The cost to complete shipbuilding programs under contract over fiscal years 2007–2009 is $1.07 billion. The fiscal year 2007 budget requests $556 million for shipbuilding cost to complete. The allocation of cost to complete funds is: $348.4 milion for CVN 77, $114 million for the SSN 774 class, and $93.4 million for the LPD 17 class.

As of December 2005, CVN 77 construction is approximately 57 percent complete. Following several detailed program evaluations with the shipbuilder in 2005, the Navy revised the CVN 77 program cost estimate to $6.057 billion. Section 122 of the fiscal year 1998 National Defense Authorization Act imposed an original limitation on the total cost of procurement for the CVN 77 of $4.6 billion. Section 122 also authorized the Secretary of the Navy to adjust the cost limitation under certain circumstances and required the Secretary to notify Congress annually of any adjustments made to the limitation. The Navy last adjusted the cost limitation to $5.357 billion in 2005, notifying Congress with the report submitted with the fiscal year 2006 President's budget request. The remaining $700 million cost increase is the result of factors not covered by the Secretary's existing adjustment authority, including the costs of increased labor hours to construct the ship (including rising health care costs), increased material costs, and the anticipated costs required to cover the Federal Government's contractual liability to the point of total assumption by the shipbuilder, Northrop Grumman Newport News. As a result, congressional action is requested to amend Section 122 to increase the cost cap to $6.057 billion to accommodate the CVN 77 program cost estimate.

The *Virginia* class program office is working with the shipbuilders to deliver the first four ships of the Class within the available funding. To accomplish this, descoping actions have been initiated on SSN 775, with similar descoping actions anticipated for SSN 777 to deliver on budget.

The remaining six ships of the *Virginia* class are under a fixed price incentive (FPI) contract that was converted to a MYP for the sixth through tenth hulls (five ships) in fiscal year 2004. This contract includes steep share lines where the contractor bears 55 percent of the overrun and special incentives to focus the shipbuilders on producing ships for the lowest possible cost. Early indications show significant savings ($400 million) on material purchases for these five ships. Future contracts will continue the use of MYP contracting, subject to congressional approval, and are planned to be FPI contracts with fair and achievable targets and steep penalties for cost overruns.

In the *San Antonio* (LPD 17) program, the Navy has incorporated lessons learned from the construction and testing of the lead ship into plans for the follow ships. The fiscal year 2007 President's budget request is for $93.4 million and a total of $159 million across the Future Years Defense Program. The Navy continues to work to reduce contract changes and has implemented requirements-to-cost tradeoffs and contract scope reductions which result in a stable production baseline for the follow ships. The fiscal year 2007 President's budget request for the class reflects the use of "realistic" shipbuilding inflation projections. The Navy is pursuing an affordable conversion to a fixed price type contract for LPDs 18–21. We plan to procure future ships of this class using fixed price type contracts.

During the last year, the Navy has worked closely with Congress to identify those prior year costs due to the impact of Hurricane Katrina. Congress has already appropriated funds to cover much of these costs in a supplemental appropriation. The Navy is committed to ensuring that these supplemental appropriations are spent only on Government responsible costs rising directly from the results of Katrina.

SUMMARY

Our mission remains bringing the fight to our enemies. The increasing dependence of our world on the seas, coupled with growing uncertainty of other nations' ability or desire to ensure access in a future conflict, will continue to drive the need for naval forces and the capability to project decisive joint power by access through the seas. The increased emphasis on the littorals and the global nature of the terrorist threat will demand the ability to strike where and when required, with the maritime domain serving as the key enabler for U.S. military force.

Accordingly, we will execute the global war on terrorism while transforming for the future fight. We will continue to refine our operational concepts and appropriate technology investments to deliver the kind of dominant military power from the sea envisioned in Sea Power 21. We will continue to pursue the operational concepts for seabasing persistent combat power, even as we invest in technology and systems to enable naval vessels to deliver decisive, combat power in every tactical and operational dimension. We look forward to the future from a strong partnership with Congress that has brought the Navy and Marine Corps team many successes today. We thank you for your consideration.

Senator TALENT. Admiral Edwards.

STATEMENT OF RADM MARK J. EDWARDS, USN, DIRECTOR OF WARFARE INTEGRATION, N8F, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral EDWARDS. Yes, sir. Chairman Talent, Senator Kennedy, Senator Reed, distinguished members of the subcommittee, it is a privilege for me to be here today as the Navy's lead warfare integration officer, to appear before you to discuss the Navy shipbuilding and industrial base. I am joined by Admiral Sam Locklear, the Navy's Director for Programming, and together we are here to assure the subcommittee that we have a stabilized shipbuilding plan and the means to execute it.

When Admiral Mullen took over as CNO, he promised to deliver a capable, affordable, and stabilized shipbuilding plan that builds to a specific number. He has done that. It is the 313-ship shipbuilding plan. We are going to execute this plan. To do this, Navy

has committed to providing the resources. At the same time, we are going to reduce the costs and drive out instability. We intend to uphold our end of the bargain, and we need a similar commitment from industry to reduce the shipbuilding cost. The DOD conducted a detailed risk assessment of all classes of ship construction plans in preparation for the submission of the President's fiscal year 2007 budget. This review carefully considered options across the entire Navy/Marine Corps team and analyzed the future impacts to warfighting effectiveness and the Nation's shipbuilding industrial base. This plan provides balance and stability in warfighting. It should be noted that the fiscal year 2007 budget was the first budget that this CNO could affect albeit in a minor sense. The fiscal year 2008 budget, currently under development is his first opportunity to affect changes. Let me assure you, we have this task and we will carry it out.

Delay, disruption, or changes to the 313 shipbuilding plan will weaken our ability to field the right force in time to meet the warfighting requirements of 2020. Admiral Locklear and I look forward to answering your questions concerning the plan.

Along with shipbuilding, I know the committee has a longstanding interest in seabasing. Seabasing is a transformational concept to overcome the challenges of speed and access. Transformation is required in order to ensure access when and where we need it. Denied access to coalition airfields is not without precedence. There are significant examples in recent years past of nations friendly to the United States denying us military access. The anticipated global environment requires the Nation to have a flexible, responsible response capable of addressing any situation independent of foreign base availability. That environment also requires the Nation to have a joint forcible entry capability in time to seize the initiative in support of national objectives.

Forward deployed forces, carrier and expeditionary strike groups, surface action groups, and specified Army brigade combat teams will provide a rapid, initial response and form the nucleus of the seabase. Additional joint and/or coalition platforms and capabilities will join as required. Because of the dynamic nature of these missions and tasks, the seabase must be capable and scalable across the entire range of military operations from humanitarian assistance and disaster relief through opening access for major combat operations. The seabase is any combination of ships, aircraft, boats, people, joint or coalition tailored to meet the mission, but flexible enough to adapt to the changing mission requirements. The fact that the seabase is maneuverable and capable of remaining at sea over the horizon will reduce the dependence on other nations' foreign territory and improve security, as we send only the teeth of the force ashore to keep logistics still at sea.

We are grateful for this committee's support for our Navy. Your continuing support is critical. We look forward to the future from a continued strong partnership with Congress, and we thank you for your consideration and are ready to answer your questions.

Senator TALENT. Thank you, Admiral. Let me just ask a general question and when the other committee members are here, I will defer to them and see what they cover, and then I will pick up some other questions.

The shipbuilding plan, which I was relieved to see, I think is realistic in terms of numbers. It concludes we are going to need at least $13.4 billion per year. Now, setting aside for a second the fact that the CBO thinks costs need to be 20 to 30 percent higher, and I have not always bought what CBO has said in the past but let's set that aside for a second. What are the Navy's plans to fence the budget in a way that can sustain that $13.4 billion? Where are you going to get the money, basically?

Admiral LOCKLEAR. Mr. Chairman, thanks for that question. First of all, let me say that again when Admiral Mullen came in as CNO, he made the 313-ship plan his highest priority. As his programmer, I am on the final stages of determining how the budget proposal gets put together. After we talked about capability and analysis, that type of thing, he in no uncertain terms has directed me to find the money to ensure that we reach the goal of 313 ships by 2020. I would say that the $13.4 billion, that is in fiscal year 2005 dollars. In fiscal year 2007, we were unable to achieve that because he had not been here very long, but what we were able to do in 2007 throughout the preparation of that budget's submission and throughout the QDR was to be able to ensure that the shipbuilding plan the Navy had in 2007 did not become a significant bill payer for other things that might need to be done.

In the Program Objective Memorandum (POM) 2008 process we are building, the plan through fiscal year 2013 is underway. As there is to everything we budget for, there will be some challenges. My expectation is that we will reach that fiscal year 2005 level of $13.4 billion about midway through the FYDP. We probably won't realize that right off, but it is a sustainable ramp that reaches that 2020 timeframe of when we will have the 313 ships. We are already moving in this process to pressurize all the other accounts that the Navy has. Our manpower accounts are a possibility in my view as a programmer, and we are pressurizing those accounts. We have the greatest sailors in the world. They have great compensation. We are grateful for all that you do to provide that. So we are dealing with trying to control those costs to control the size of the Navy, so it is affordable.

When it comes to our readiness accounts, we are taking a very, very hard look at all aspects of our operating accounts to ensure that we are getting the maximum amount of operating efficiency for every dollar. It is my opinion that we will be able to realize this shipbuilding plan that the CNO has and that you will see it in the fiscal year 2008 President's budget.

Senator TALENT. 2008. Now, you mentioned the manpower accounts. We pushed sea swap pretty far. I am hearing you say manpower and readiness. Those accounts have given at the office. I mean Admiral Clark was pretty good in getting money out of that. Do you really think you are going to be able to find $5 billion out of those accounts?

Admiral LOCKLEAR. No, sir. I guess what I meant to say was that we will ensure that we pressurize those two accounts for maximum efficiency. We continue to do that, as we should. As we go down the road, we will have other program decisions that have to be made. There will be other program areas that we will have to go look at very hard to ensure where they fall on the CNO's priority list. My

expectation is that some of those programs will end up having to become billpayers for this plan.

Senator TALENT. Do you care to share with the committee which programs you may be thinking of?

Admiral LOCKLEAR. I do not have, at this point in time, a firm enough understanding of which ones we would offer. Those would be part of the POM 2008 debate that we have internal to the Navy.

Senator TALENT. It is a concern I have. I think we just may need to confront the fact that we are going to have to get more money into the Navy budget overall. We have begun to take steps in the Senate to try and advise our colleagues of the need for this, as you are probably aware. Certainly, Senator Reed and Senator Lieberman were leaders in this effort, and I was involved in it. Senator Collins was also. We see these needs coming up and I don't know how you are going to get $5 billion, assuming that is enough for the Ship Construction, Navy (SCN) account, out of the rest of the Navy, given what we have had to do in the last few years. So, we are aware of that need. We want to work closely with you in trying to make certain that we have the funds to do this. This whole program depends on the stability of these funding accounts. I know you all agree with that. We are going to have to do something in order to get more money in those accounts. We might as well confront that as soon as possible. I know the chairman is concerned as well about that. I will go ahead and defer now to Senator Reed. I have other questions, but I don't know how long he has, so let's go to him.

Senator REED. Thank you very much, Mr. Chairman. Thank you for not only your good question, but your suggestion that we need more money, because I think I agree with you entirely on that. Secretary Etter, I understand that Congressman Bartlett asked for some unconstrained shipbuilding program in the House that would be prepared by the Navy. Are you doing something like that? A program that would lay out all the long-term shipbuilding without regard to budgets. I mean what you precisely need.

Dr. ETTER. He did ask us to look at that and we are looking at it at this point. We have not completed our review.

Senator REED. When you do complete that I would be interested in seeing it and I am sure the chairman would also. If you could provide that to this committee as well. Thank you very much.

[The information referred to follows:]

As part of our analysis this past year we examined the joint warfighting requirements for naval forces across the complete spectrum of operations. For traditional conflicts, we assessed the demands for both capability and capacity to counter the threats as laid out in the Defense Planning Guidance. Since no joint document exists defining the joint demands for the global war on terror and other nontraditional forms of conflict, we developed an analytically-based requirement through a combination of modeling and extensive inputs from the Navy component commanders worldwide. The Navy plan delivers sufficient capability and capacity to meet these demands, today and in the future.

This should not imply that the force does not incur risk, it obviously does. The Navy plan minimizes risk in core Navy capabilities critical to the overall success of the joint force. Some of these areas include anti-submarine warfare, countering anti-access threats, and mine warfare (particularly mine countermeasures). In areas where there is significant joint capability and capacity, the plan accepts more risk to capitalize on joint interdependencies. It would be inaccurate to apply a strict modifier across all risk definitions. The campaign analysis, incorporating the Office of the Secretary of Defense approved models, assessed criteria consistent with de-

fense planning scenarios in terms of "what it takes to win" major contingency operations. In all cases, the Navy plan meets the minimum force required "to win" the modeled campaigns, and in most areas with significant overmatch.

As stated previously, the Navy plan minimizes risk in core Navy capabilities critical to the overall success of the joint force. In areas where there is significant joint capability and capacity, the plan accepts more risk to capitalize on joint interdependencies. Therefore, while the Navy may be taking more risk in certain warfare areas, the overall joint and/or (combined force that is brought to the fight reduces this risk significantly. To consider a Navy that would assume low risk in all warfare areas would be to consider a Navy that provides a force capable of winning a major conflict as a standalone force, contrary to current strategic and defense planning guidance. While a "low risk" Navy would most likely have greater capacity and capability, many of these capabilities would provide extensive overmatch when considering the joint force as a whole.

Senator REED. I will follow on and I think Senator Lieberman will also follow on in terms of questions about the submarine industrial base and this should come as no surprise. We are now at a situation where we are building one submarine a year. We are scheduled to go to two in fiscal year 2012. But even with this projected build rate, and you factor in retirement and other situations, we are going to dip down below 48 submarines in the period of 2019–2035. Most people are very concerned at that level that we will not be able to conduct all the missions that the commanders of a combatant command need. In fact, we are going to ensure some strategic risk, which essentially raises a question of how we deal with this now, so we don't get into that situation. It compels me to suggest and I think my colleagues would also suggest, I hope, that we have to get a two-per-year build rate very quickly. Can you comment, Admiral?

Admiral EDWARDS. Yes, sir. As you all know, sir, as far as the combatant commander (COCOM) requirement, we are right now satisfying probably 60 to 65 percent of that. However, our analysis that looks out to the 2020 timeframe says that we need 10 submarines deployed worldwide at any one time. Forty-eight submarines is the number that provides that. As we go down to 40, as you were mentioning, we have 7.5 submarines that we need deployed all the time for the warfighting aspects. The other 2.5 are for presence only. So from a warfighting standpoint, our analysis shows that we have enough submarines to carry out the warfight. That would be at the expense of the presence requirement. It would be a balance on where we operate the rest of the submarine fleet. In addition, I think the committee also knows that we are planning to split the submarine homeporting, 60 percent on the west coast and 40 percent on the east coast in order to mitigate some of the long time lines associated with the Pacific area of responsibility (AOR).

The maintenance aspects of the *Virginia* class submarine are far superior to the SSN 688, as you also know it is a fantastic platform. So, we will get a bounce from the increased operational availability of the submarine.

Senator REED. I think this issue of operational risk is significant, even though your analysis suggests that we can meet the warfighter's requirements with 40 submarines. That is very close to the edge. I have to presume that is looking at, not the worst case, but probably the middle case or maybe even the best case. I know some others like Admiral Konetzni, the former deputy com-

mander of all submarine forces, who suggest that when you get that low, the risk is not moderate, it is severe. It really could be a crisis. We also understand that it takes awhile to build a submarine, so if we don't reverse this process, we could wake up in 2013 or so with insufficient forces. I just want to urge you to look again. The related issue is, of course, the price of the submarine. The cheaper they are, the faster I think we get to two per year. But what the manufacturers tell us is that until they get to two a year, they really can't lower the price per submarine because of all the overhead cost and other costs. This is a program where I sense that the manufacturers are taking price out. There are some other Navy shipbuilding programs where the price keeps going up and up and up; in this one I think they got it in the right direction. It suggests to me this is another argument for two per year production very quickly to get the price down. Admiral, do you have comments?

Admiral EDWARDS. Yes, sir. There are always puts and takes. If we move the submarine procurement rate to the left, and many say by fiscal year 2009, that money has to come from somewhere. So, you are going to pressurize the carrier, the large deck amphibs, the LCS, and the DD(X), so there is no free luncheon in here. We think we have a plan that is executable. That plan calls for two submarines by 2012. We think with the investments that we have made, we will get to the $2 billion per ship and I think you are right in this particular case, the industrial base is driving the cost and helping out there to drive the cost of the submarine down. So, that is what our program is.

Senator REED. I thank you. I don't want to monopolize time, just the number of changes I have seen in those procurement plans for submarines and stretching out the two-per-year suggests to me that I am not confident the same way as you are. Also I think the budget pressure that we are seeing building up this year, next year, and out several years is just as excruciating as what we might sense this budget cycle and next budget cycle. So, thank you very much. Thank you members.

Admiral EDWARDS. Yes, sir.

Senator REED. Thank you very much.

Senator TALENT. If I can follow on something in one of Senator Reed's questions. Are there programs—I am sure there are programs, and the submarine is one of them—where if we could invest more money up front, you could save money within the FYDP? DD(X) may be a similar one. I am sure Senator Collins would want to follow on that. Would you agree with that, Admiral Edwards?

Admiral EDWARDS. Yes, I do, sir. In fact, we have looked in 2007, I think we have put some money in there across the FYDP about $154 million—and that money was going to drive the cost of the submarines down. We have not looked at the DD(X). Allison may have some more information on that.

Ms. STILLER. Yes, sir. On DD(X), because of where we are in the detail design phase, what we have done is sat down with the requirements community and reviewed each of the individual requirements. There is some capability that we have decided to back off on that won't impact the key performance parameters of DD(X). For example, whether to make the storeroom into a convertible

magazine that will save costs. So as we detail design the ship we won't put that into the design, so we won't have that cost up front. That is why we feel that on DD(X), as you have heard the lead ship at $3.3 billion, we feel we can get about $265 million out of the lead ship and we are actively working to do that in partnership with the requirements community. This is unlike the submarine where the detail design is complete and you are in production. We have put the investment, as Admiral Edwards said, at about $154 million across the FYDP to drive us down to the $2.2 billion per submarine in 2012.

Senator TALENT. If you would let the committee know, certainly with regard to *Virginia* class, but also any other programs, where speeding up an investment helps, instead of always pushing everything to the right, actually pushing something to the left a little bit. Where you would have some confidence that you would save some significant dollars within the FYDP, let's say, if you would give us that and document that so we can really begin trying to influence this process here. I think we are all committed to doing that. If we can show the Senate that we can actually save some money, then we maybe will be able to get these dollars. We really want to influence that process. I know Senator Kennedy feels—and I think Senator Warner also and Senator Levin—that this is the minimum that we need to do for the Navy. If we are serious about doing it, let's do it in a way that is going to save us money within the FYDP. If that means making the case for getting some more money upfront, let's do that. So if you would give us that and work with committee staff to document that, at least with the submarine, but potentially with the other programs, we would appreciate it.

Admiral EDWARDS. Aye, Aye, sir.

[The information referred to follows:]

The Navy has $20 million in the fiscal year 2007 budget submission which is dedicated to cost reduction initiatives on *Virginia* class submarines to help achieve the $2 billion submarine (fiscal year 2005 dollars) target. An additional $65 million would enable cost reduction initiatives such as the Large-Aperture Bow Array, Propulsion Plant changes, and non-propulsion electronics modernization efforts to begin. Accelerating this funding would allow cost reduction opportunities to be introduced to be production submarines earlier than currently planned. It should be noted that alone the $65 million addition is not the total amount required to achieve the $2 billion/submarine (fiscal year 2005 dollars) savings.

General Dynamics Electric Boat currently employs about 3,500 engineers and designers (including life cycle support). They are at an employment peak and are projected to ramp down as *Virginia* class and SSGN design efforts conclude. With current funding levels they are projected to be at 3,000 engineers and designers at the beginning of 2007 and down to 2,600 by the end of fiscal year 2007. The addition of $65 million in RDT&E for *Virginia* class cost reduction initiatives will support 400 designers and engineers over 2007, allowing Electric Boat to maintain a level load of 3,000 designers/engineers throughout the year.

Senator TALENT. Senator Lieberman is next.

Senator LIEBERMAN. Senator Collins.

Senator COLLINS. You were here first.

Senator LIEBERMAN. You are very gracious, Senator Collins. Thank you. I will not be long.

Senator TALENT. I should also mention that since you are older, she thought you should go first. [Laughter.]

Senator LIEBERMAN. Right again. A fact-based conclusion. I thank the witnesses for being here. Mr. Chairman, thank you.

Thanks for your excellent leadership of this subcommittee. It has been a pleasure to work with you. Also, a pleasure to work with you on the floor for the Senate together. We have attempted to do what to many people may seem counter-intuitive because of the overall size of the DOD budget, but basically we don't think it is enough. I suppose everybody could find their excess spending within the budget. The other subcommittee—I am on Airland with Senator McCain and we are focused on how we can make the acquisition process more efficient, more cost effective. But Senator Talent has been a real leader in trying to raise up the budget for the DOD, because the fact is we are short changing all of the Services in my opinion in the acquisition of equipment systems needed for our defense. So, I thank you for what you said.

Just building on the exchange that just occurred and to give you an example based on what Senator Reed was asking and Mr. Chairman what you said, we are very concerned. Some of us are focused, in our case on Electric Boat (EB) and the submarine budget, on the need—which the Navy, of course acknowledges—to go to two submarines a year. Otherwise we will fall below that 48 minimum requirement as the Chinese are building and others are building more submarines. At the same time the Navy, the CNO, and the Secretary are saying to EB and others, you have to bring your cost down. I am very proud I am not here to sign a contract but I have been in rooms that the executives at EB have said and they have been asked to cut the cost of this fantastic *Virginia* class submarine from essentially $2½ billion to $2 billion. The answer that I have heard people say at the top is we think we can do that if you would take us to two submarines a year. The sooner you do that, the sooner we will be able to cut it. So there is a very specific example of quite a substantial saving that can be achieved if we can move the two submarines a year forward. We are all going to be working together on that.

In that regard, I wanted to ask—I suppose any of the witnesses who care to answer—one of the effects of this short funding of capital acquisitions by the DOD is having this effect at EB. Obviously there are two manufacturers of submarines. I think everybody acknowledges the fact that the premier and in some ways the only submarine design and engineer force is at EB. For the first time in almost 50 years, as you all know, there is no new submarine design on the drawing board. The current design programs are near completion. So, EB is in a position, at the status quo, where they are going to have to start laying off, in fact they have already started laying off designers. This is a very unique talent. I suppose it can always be replaced with training but it is going to take a long time. Our undersea superiority depends on the maintenance of this workforce.

I was very pleased at the full committee hearing on the Navy budget, earlier in March. Secretary Winter remarked that losing this part of the submarine industrial base is an "issue of great concern" to him. I wonder if any of you would talk about this. Obviously, one possibility here is to look, as we are, for some new programs to design, not to make them up but real ones that would benefit the Navy and try to move it to this force. There have been some very creative assignment of work on some of the design work

on the carrier, going to this unusually talented workforce. So, I would invite your general reaction to the problem and what you think we can do about it.

Dr. ETTER. I would like to say a few things to that, Senator Lieberman. I think you are exactly right. This is a very critical capability that the country must keep because we do intend to do future submarines. So, we must figure out what is the right number of designers that we need, and what are the kinds of activities that we can use to keep them involved in design. Those are things that are very important to us and we have a number of steps underway to help us with that.

We have a RAND study that will be completed in the fall. It is going to look across the various skills within the designer set and that is going to help us identify the most important ones. We also are looking at other possibilities, including whether we can perhaps do some things with the *Virginia* class submarine to continue to improve things there.

Senator LIEBERMAN. Right.

Dr. ETTER. There is a whole range of things that we are looking at. One of the things that, of course, is a challenge is to try to figure out how do we do this in a way so that by the time we do need the submarine designers again, we still have those people available. It is not looking at really just trying to keep the entire design community that is there now because many of those would not be around when we get ready to do this. So, there are a lot of challenges. We understand the problem and we do think that within the next 6 months to a year, we are going to have some solutions to do this. Because of the design being completed for *Virginia* now and the *Ohio* class changes, this was not a surprise. So, it was something that all of us knew was coming. It is one we have to figure out how to deal with.

Senator LIEBERMAN. It is.

Admiral EDWARDS. If I could follow on that?

Senator LIEBERMAN. Please, Admiral.

Admiral EDWARDS. Sir, I am sorry.

Senator LIEBERMAN. No, go right ahead.

Admiral EDWARDS. The fact is though, increasing production of the submarine now, the *Virginia* class submarine, does not solve that design issue.

Senator LIEBERMAN. It is a separate issue.

Admiral EDWARDS. We have to decouple that and then we have to attack really those critical tasks that these designers do to make sure that those are kept alive as we go forward with the submarine program.

Senator LIEBERMAN. Do you have any thoughts about other kinds of shipbuilding in which these designers might be used?

Dr. ETTER. We do have other design activities going on, for example, the DD(X) is one of the areas we believe that some of these designers would be able to contribute.

Senator LIEBERMAN. That is good to hear. Of course, we live in this remarkable age of telecommunications advances, so that they can design from one place and the designs can be immediately transmitted and used back and forth in another place far away. I appreciate those answers. That is a real high priority I think for

the country but obviously also for the submarine program and the workers who are there. Mr. Chairman, I think I am going to leave it there. I would ask your consent that I include a more general statement on the budget, which Senator Reed and you in some measure have already commented on, be printed in the record. I would thank you.

[The prepared statement of Senator Lieberman follows:]

PREPARED STATEMENT BY SENATOR JOSEPH I. LIEBERMAN

Good afternoon and thank you for attending. I want to welcome all of the witnesses to our Seapower Subcommittee hearing, which continues our discussion of the Navy's proposed budget and its warfighting plans for the future.

I applaud the Navy's ambitious long-range shipbuilding plan, which was submitted to Congress in February. Our current Navy fleet is at its smallest size since prior to World War I. However, I am worried about whether the administration has requested enough money for shipbuilding in the budget to achieve these goals.

Shortchanging our shipbuilding account jeopardizes our Nation's security. I am afraid that our plan for submarine construction is woefully inadequate. The Navy's plan calls for a submarine fleet of 48 boats. I believe this number is too low for the strategic threats we face. First, several submarine officers and Defense Department officials argue that fulfilling the day-to-day demands for attack submarines, particularly intelligence, surveillance, and reconnaissance (ISR) missions, would require a fleet of at least 70 submarines. We have been told that even with our current fleet of 54 submarines, the fleet can only provide combatant commanders with 65 percent of the "presence with a purpose" they requested. If our submarine fleet is too small now to perform the tasks that our warfighting commanders want done, we are inviting a level of risk that is unacceptable if we accept an even smaller fleet. Due to the proliferation of new trouble spots around the world, the need for undersea ISR has dramatically increased. A diminished submarine fleet cannot meet the demands of a post-September 11 world.

The prognosis only gets worse. If we adopt the Navy's proposed plan, which delays an increase of submarine production to two boats a year in fiscal year 2012, we will fall below the minimal requirement of 48 submarines in 2018. At that time, our intelligence estimates conclude that China will have a well-equipped, modernized submarine fleet of at least 50 boats. The Chinese are designing new classes of submarines with increased capabilities. At the same time, new submarines are being built elsewhere besides China, and they may be in the hands of future adversaries. If we do not move to produce two submarines a year as soon as possible, we are in serious danger of falling behind China, and we may have to accept dangerous risks elsewhere because we will have too few submarines.

The submarine is not a Cold War legacy. In fact, the *Virginia*-class submarine was designed specifically for post-Cold War operations. It operates well in littoral waters, gathers intelligence, engages in strike operations and antisubmarine warfare, and provides Special Operations Forces with delivery and support. Because of its near-shore capabilities, our submarines can intercept signals that are invisible to reconnaissance satellites and other platforms. These unique and powerful features make the *Virginia*-class an indispensable weapon in our arsenal to fight the "long war" on terrorism. If we do not increase our build rate, we will not replace our aging *Los Angeles*-class submarines fast enough. As a result, we run the risk of turning a deaf ear and a blind eye to a gaping hole in our national security. We live in a world in which we sometimes cannot anticipate attacks upon our homeland and military. In this instance, we can prevent a looming threat on the horizon with decisive action.

The very least we can do is escalate production to two submarines as soon as possible. If we do this, we will maintain the recommended force structure fleet of 48 boats until 2025. While I still believe a fleet of 48 boats is too small for the conventional and asymmetric challenges ahead of us, it does put us in a better position to reduce the production gap between the United States and its competitors.

We have the brainpower and ability to design and build the best submarines in the world in the United States. If we don't act now, we may lose this capability, and it will be difficult to regain it. This is an issue of national concern. Submarine manufacturing companies are located in 47 States across the country. As a matter of national security and economic stability, we must take the necessary steps to preserve the submarine industrial base in the United States.

I am especially concerned about our Nation's submarine designers. This is the first time in almost 50 years that we do not have a new submarine design on the table. As more designers and engineers are laid off—and we just laid off 154 workers from Electric Boat—they will likely leave the business and there are no replacements. The news only gets worse. It is anticipated that Electric Boat will be forced to lay off up to 2,400 additional workers before the end of the year. Even if those laid off do return to submarine work, there could be other delays in restarting production. If designers are out of work or employed elsewhere for more than two years, they will lose their security clearances. The process of reinstating those clearances can take over a year. It is imperative that we preserve our submarine design workforce before any additional layoffs occur. I intend to fight to include funding for design work in this bill.

In addition, I think we should transition New London from the world's submarine center of excellence to the world's undersea warfare center of excellence. We should concentrate the east coast submarine force there, and base the LCS antisubmarine warfare and mine countermeasure modules there to build a true undersea warfare center of excellence. Devoting more resources to new design at Electric Boat would further strengthen the remarkable synergy among New London, Electric Boat, and the world's leading undersea expertise in the region.

The Defense Science Board has described the attack submarine as the "crown jewel" of American defense. If we neglect our submarine production, we jeopardize our global undersea warfare superiority. We must move forward to devise a plan that will maintain a robust submarine force in the United States which can readily meet all of the challenges of warfighting, reconnaissance, and joint support placed upon it.

Senator TALENT. Thank you, Senator. To follow on what you asked about, could these designers perhaps be assigned to finding ways to reduce the cost of a submarine? In other words, we are trying to get from $2.6 billion to $2 billion. They designed it. Maybe, if we gave them this discreet assignment. Look at how the engineers are doing it. Look at how the operators are doing it in the shipyard. We will put a little money up front to pay for you trying to figure out how to save us money faster.

Dr. ETTER. There are activities like that going on. Allison, would you like to describe more of those?

Ms. STILLER. Yes, sir. For the cost reduction, there is $20 million of R&D in fiscal year 2007. As Admiral Edwards mentioned, there is $154 million across the FDYP that will employ some of these designers. As part of the RAND study, we have broken the design capabilities into 24 critical skill sets that we think need to be looked at. Some of those skill sets might be able to be accomplished on CVN 21 design or DD(X) design and others we feel are probably going to end up being very submarine-specific. So, we will have to look at the options. As Dr. Etter said, do you do more changes to the *Virginia* design or what are the other options? But some of those designers, yes, they are employed right now for cost reduction or will be with the fiscal year 2007 dollars.

Senator TALENT. All right. Senator Collins.

Senator COLLINS. Thank you very much, Mr. Chairman. That is a great segue to an issue that we are working on at Bath Iron Works, which is to reduce the crew size of the DDG, applying some of the technology that is being developed for the DD(X). It sounds like you are proposing a similar effort to the one underway at Iron Works right now and I suggested a modest addition to the budget to continue that work. I think it offers great promise. First of all, I want to say that it is very nice to see Dr. Etter and Secretary Stiller again, and our admirals as well. That brings me back to the issue of the cost of the DD(X). I think lost in this debate has been the life cycle costs of the DD(X) with its smaller crew size. In fact,

not only are there substantially greater capabilities over the DDG but that much smaller crew size also produces cost savings in the long run. I wonder, Dr. Etter, if you could comment on that? I always hear this great alarm over the $3.2 billion cost figure and yet, if you look at the life cycle cost and if you factor in inflation and the increased capabilities, it really is not a huge difference. Secretary Etter?

Dr. ETTER. Thank you. Yes, that is one of the important capabilities of DD(X). Reducing the crew size is something that is almost impossible to do once a ship is built. It is something you have to do from the very beginning, and build the design around that. So by using that as one of the key things that we wanted to put into this, we have greatly affected the life cycle cost of this ship. It also has been enabled by a lot of the new technologies that we have been working on, so it is a combination of new technologies and designing the ship in very different ways that has allowed us to do that.

Senator COLLINS. Admiral Edwards, I noticed you were nodding. So, I want to ask you if you have anything to add?

Admiral EDWARDS. We agree. I mean I am a huge proponent for the DD(X), but not only for crew size and life cycle costs, but for the tremendous warfighting capability that DD(X) is going to give with a much smaller crew. Just as you said, what we are learning from DD(X) and these technologies are also going forward and forward fitting the ships of the future, but also back fitting some good ideas on DDG, so that we will be able to take out 30 or 40 people, we think, on the DDG during their modernization.

Senator COLLINS. That is significant. There is real cost in people, as we all have learned. If we can reduce by back fitting the DDGs, the crew size by 30 to 40 people, that offers significant savings. I think that is why that additional research is important. It also helps with the industrial base problem as far as evening out the workload a bit. I do want to also reinforce the issue that all of us have brought up and that the chairman so eloquently stated, and that is we have military requirements for more submarines. For two a year, not one a year. We have military requirements for more DD(X)s. Either 12 over the period of time, if you use Admiral Clark's figure or if you look at Admiral Mullen's proposed fleet, at least 7, and yet we are only budgeting for 5. So, it is not as if these ships and these submarines are not needed. They are needed. But what is happening is not only are we not meeting the military requirement, but also we are building an uneconomical production rate and that contributes greatly to the high costs. So, I wasn't surprised to hear my colleague, Senator Lieberman, say that perhaps as much as a half of billion dollars could be taken out of the cost. So, I think we need to work together to figure how we can build what we really need to build. It is going to lower the cost per unit. So, I hope we can work together on that. Admiral Edwards, do you think that would be a positive direction for the subcommittee?

Admiral EDWARDS. Absolutely, I do. Yes, ma'am. We look forward to doing that.

Senator COLLINS. Thank you. One final question, if I could, Mr. Chairman? I want to direct it to, I think Dr. Etter is the one to answer this. Admiral Hamilton recently did a briefing on the

DD(X) program. It was a very helpful briefing. He said during the course of it that, I should try to find the exact quote, but it was something on the lines that we will never again talk of a one-shipyard winner-take-all strategy. I was very pleased to hear him say that. This Congress has enacted a prohibition in permanent law against going to a one-shipyard strategy. But I hope we are not just deferring that idea and instead that Hurricane Katrina's damage at Ingalls and a rethinking of the acquisition strategy has convinced, not only Admiral Hamilton, but also those of you who are in the civilian positions that that was an idea that should be abandoned forever.

Dr. ETTER. I would respond with two things. I think one of the things that we recognize from Hurricane Katrina, although we thought this but it has been driven home by Hurricane Katrina, is how important it is to have flexibility in our shipyards. Being able to have options there is very important to the country. As far as DD(X) goes, we are committed to the dual lead ship strategy. We think this strategy will help us get this ship at the right price with the capabilities that we need. As Admiral Edwards mentioned, it will make the wonderful new warfighting capabilities that are important. So, we think the current strategy we are on is really a good strategy and do not plan to do a winner-take-all.

Senator COLLINS. Thank you. Thank you, Mr. Chairman.

Senator TALENT. Thank you, Senator. Admiral Locklear, let me ask you a question. When did you say you anticipated getting to that $13.4 billion, what year?

Admiral LOCKLEAR. Yes, sir. In our current planning process, my expectation is that we will realize that $13.4 billion fiscal year 2005 level about midway through this coming FDYP. I would anticipate about the 2011 timeframe based on a plan that we see being laid out. Now, I would like to emphasize again that critical to this, from a programming perspective, is stability. So, when we look at individual ship types or submarines or any other program and we decide to change where it lies in that program, it makes it very difficult to maintain that stability and to meet those goals. I would use, for example, the SSN to move that to the left. By having it, we are saying in two in 2012. I think we ensure, as I recall about a 14-year period where we drop below the 48 total. To move it to the left 2 years, I understand, I am told that that will roughly cut in half the number of years where you would drop below that level. In order to do that you would not have to put advance procurement in—we looked very closely at this because it was appealing to us from the beginning. We looked at bringing advanced procurement to the left and then moving that ship to the left. What that did to us is that it gave us an additional bill of about $7.5 billion in the FDYP that we now have to account for. It also means that by moving it into fiscal year 2009, it now comes in competition with the money that I have set aside for the rest of the shipbuilding. So, as a programmer I am then forced to go to places where I can find that amount of money, which might be CVN 21, DD(X), programs that are all so near and dear to us. So, from my perspective you have to consider the return on investment that we would get from where we are today, to cut the time we would have fewer than 48 submarines down by 7 or 8 years. The cost to do that

was difficult to plan into the program. So stability is critical in us being able to attain this and keep those ships in the places because they are such large capital investments. You know this better than I do, but in our program we have these big chunks of investment each year and sometimes they go up and down and whenever you move capital ships into the same year with a top line that is flat or can't be moved, that amount of movement in the program competes with everything else that I have to pay for in the Navy, which includes manpower already. So, it is critical that we maintain that stability to be able to get to the $13.4 billion about midway through the FDYP.

Senator TALENT. When you say critical to stability, let me see if I understand you correctly, you are saying that if we moved the second submarine to the left and this took money out of other programs that you had planned to buy and therefore created instability in those programs, then the cost of those ships might go up because you could not carry out your plan regarding those programs. Is that what you are saying?

Admiral LOCKLEAR. Yes, sir. I categorize that as churn. We spend a lot of money in all of defense industry building things and costing more because of churn. Because the yards can't plan, the yards can't build. There is not predictability, so we create this churn. So we have to be very careful. We have to be cognizant and try very hard to eliminate that churn from our shipbuilding plan.

Senator TALENT. So, the shipyards know, let's say for DD(X), that if a certain amount is plugged in for fiscal year 2011, that they get that amount for DD(X) and they don't lose it because we plugged a submarine in a year earlier or something like that.

Admiral LOCKLEAR. Absolutely. Yes, sir.

Senator TALENT. But if we could find the submarine money, in addition of course, then you don't have these concerns regarding instability?

Admiral LOCKLEAR. No concern whatsoever, sir.

Senator TALENT. Yes, you'll take additional money if we can get it, I am sure. I think you said fiscal year 2011, to get approximately to get to $13.5 billion, so would you expect to see increments you know evenly increasing every year to get to that figure? We are now at about $8.7 billion, so it is about $4.5–$5.5 billion. Would you expect to see a ramp up basically?

Admiral LOCKLEAR. Yes, sir. I would expect to see a ramp up.

Senator TALENT. At approximately even increments? Is that what you would expect?

Admiral LOCKLEAR. I am unable to tell you definitely that it would be an even increment. It will be a ramp up.

Senator TALENT. Okay.

Admiral EDWARDS. It is hard, Mr. Chairman, to build average ships with average dollars.

Senator TALENT. Sure.

Admiral EDWARDS. Because there are spikes in it. So, we can come back to you with that and give you the exact.

Senator TALENT. I would appreciate that and that is for our oversight purposes.

[The information referred to follows:]

The 30-year shipbuilding plan was designed to acquire the necessary capabilities to pace the threat, sustain near-term operational readiness and provide a clear and reliable demand signal to the industrial base. The Navy has determined that the average annual investment necessary to achieve and sustain the 313-ship force structure is approximately $13.4 billion in fiscal year 2005 dollars. The Navy is making the resource allocation decisions necessary to quickly increase shipbuilding funding to this average $13.4 billion level. The plan is balanced and sutainable with our current personnel and readiness requirements.

Senator TALENT. See we know you are serious about this plan. I think we are all serious too. If you are going to get to $13.5 billion by fiscal year 2011, you are going to be ramping up in the mean time. We want to be certain that what you are submitting is the ramp-up that you really believe we need to get to $13.5 billion. If in the process of getting your budget reviewed, that number is driven down because of budget constraints by people outside of the Department, we want to know that. If we don't have any idea about what that increment is going to be, we are not going to know whether that number was less than you actually want in a particular year and was driven down by budget constraints or was just the result of a normal fluctuation as you planned the program. So, I would like you to work with our staff to give us an idea of how quickly that ramp up is going to occur, so we can oversee if we see anything out of the norm and find out if there was some budget driven reduction in that number. I will just repeat again, I am serious about this. I think we are all serious. These words that I put in my statement and that you put in your statements are not just words, we have to have this naval power.

Admiral Locklear, you mentioned that if we move the submarine to the left, so we go from 14 to 7 years without that presence that might destabilize some of the programs. But you mentioned that you are going to try to get money out of the readiness accounts and if you can do it without undermining readiness, that is fantastic. But, the fewer ships we have trying to cover, it just seems to me, the more stress on the fleet we do have and so that is going to work against your attempt to reduce readiness accounts and personnel accounts. You see this as a kind of thing where we can end up defeating our purposes, we are trying to save money on shipbuilding but that increases readiness costs or personnel costs because we are covering with a fleet that is too small. Then we have problems. Would you like to comment on that?

Admiral LOCKLEAR. I couldn't agree with you more. Just in my initial comments what I tried to convey to you was that in the area of personnel readiness we continually pressurize those to the level that we feel we can. But those accounts are fairly pressurized, so I agree. As I said earlier, to accomplish this we are going to have to look at other areas in our program to be able to accomplish this, which we are doing now.

Senator TALENT. Right, and I'm not going to ask you to give us specifics that you are just developing now. At a certain point, of course, we are going to be very interested in the specifics.

Admiral Edwards and Dr. Etter, let's go a little bit into how you are concretely planning to reduce contract changes, requirements creep, and how you anticipate the acquisition community is going to work with you in terms of stabilizing design. Now, the CNO has focused on the need to minimize change to ship contracts and re-

quirements creep. I think we are all in agreement with that. It is an absolute imperative. Admiral, let's address the requirements standpoint. Tell us with a little more concreteness, if you can, how the CNO's directions are being translated into policy and practice. Maybe some specific examples that would give us confidence that you can really meet these program estimates. Share with us and make it a little bit more tangible for us.

Admiral EDWARDS. Yes, sir.

Senator TALENT. So, we can see what you are doing.

Admiral EDWARDS. One of the first things that the CNO directed back in July, when he came onboard was to set up a requirements board. We had one in the past that was called the Ships Characteristics Board. That has now morphed into what we call the Resources and Requirements Review Board (R^3B). This is a board that can be, depending upon the topic, whether you are talking an acquisition category (ACAT) I program or an ACAT II. Whether you are talking about it being over budget or behind schedule and to what degree, we have a means of ramping up the oversight from a three-star resource sponsor, Admiral Crenshaw, up to the Vice Chief, who has a threshold limit, and then to the CNO himself. If we are going to impact a key parameter of the program or if a key parameter of the program is the major cost driver and we want to reduce the requirement, then that has to go before one of these boards and if it is a key performance parameter, that has to be made at the CNO level.

Senator TALENT. So either requirement changes going up or down.

Admiral EDWARDS. Yes, sir.

Senator TALENT. So, this setup is going to allow you to identify high cost areas and see whether you can reduce the requirement in a way that doesn't really affect capability and reduce cost.

Admiral EDWARDS. Absolutely. If it does affect capability, then we want to make sure that is not being done in a stove-pipe with people that don't understand the impact that may result in the joint requirement or from another Navy program that is relying on this capability. So, that has put a very stringent set of requirement parameters, both on the acquisition side of the house and also on the requirement side of the house. Over the past month we have probably had 4 or 5 of these R^3Bs meet. We have looked at programs that are behind schedule or have a cost over-run or are not meeting their parameters and are we willing to reduce the requirement? Are we willing to cut back on the program or do we want to cancel the program? So, that is a very concrete direction and action that the CNO has gone to in order to get his arms around it. We are not going to pressurize the acquisition side with requirements when we could live with less, and with a whole lot less dollars.

Senator TALENT. So, this R^3B is naval officers. Is that who is on the board?

Admiral EDWARDS. There are naval officers.

Senator TALENT. Also——

Admiral EDWARDS. Allison is part of that.

Senator TALENT. Allison is on that?

Admiral EDWARDS. Yes, sir. Dr. Etter would be part of that as it went up to the CNO's level, where it would be appropriate for her.

Senator TALENT. Okay. It sounds like—and the Vice Chief is going to play a key role in this.

Admiral EDWARDS. The Vice Chief is the bulldog.

Senator TALENT. Okay. That is what I was going to—that is the term I was searching for.

Admiral EDWARDS. Yes, sir.

Senator TALENT. What would trigger a review by the R^3B? Is this something where the requirement board is looking or would some other level or officer be able to trigger a R^3B?

Admiral LOCKLEAR. As a matter of fact, the R^3B now is already undertaking a look at all of our major programs within the Navy at this particular time. You can also trigger and request to go to the R^3B. It can be done from almost any venue. It can be done from another resource sponsor within the Navy, if it has to do with the manpower implication or readiness implication. They can propose those types of topics to the R^3B and have the R^3B decide whether they need to bring them forward to basically look at them from a resourcing perspective.

Senator TALENT. Within the contracting or shipbuilding community, if they see a change that may be a problem, can they take this to them?

Admiral EDWARDS. They will be required to.

Ms. STILLER. Yes, sir. We do. We will. As the Admiral said, it has just gotten started. Especially with programs that are just beginning, as we complete the analysis of alternatives and we set the initial requirements, the requirements community, I think that will be a natural venue for this to be vetted. So, as the requirements documentation works through the system, everybody knows the costs.

Admiral EDWARDS. Mr. Chairman, the costs of a program, especially a shipbuilding program, about 90 percent of the costs or 85 percent of the cost of the program is in the very initial stages of the program. So, you are adding up other alternatives and you are looking at options and you have not even gotten the design yet. But once you set on architecture and the requirements for the program, you very quickly lock in about 85 percent of your costs. As you go, even if you try to get then a requirement out you start to pay for the design change.

Senator TALENT. Sure, you generate a whole lot of costs.

Admiral EDWARDS. So, you are kind of at a place here. If you can, as Allison said, start this process at the beginning that we would call the initial capabilities documentation, basically, you get the three-star, four-star look at that point and then we can identify where the cost drivers are and then we can start really managing.

Senator TALENT. Sure. Oh, I understand. It is hard. It is very difficult to change shipbuilding on the fly. Sometimes the best is the enemy of the good.

Dr. ETTER. If I could offer——

Senator TALENT. Yes.

Dr. ETTER. Another thing that we are doing particularly on the ships where we are adding new technologies is we are trying to

keep off ramps for these, so that if we find that a technology is not maturing as quickly as we thought, we have an alterative. That is another way that we are trying to control costs. In fact, on DD(X) we did that in one of the 10 key technology areas. But, this is an important way that we are able to also have options. It is also an important thought because of this timing issue; you have to know when the off ramp is available because if we get too far in the design, we don't have those options anymore. This is another one of the benefits of having this review board.

Senator TALENT. All right, so the R^3B then is both regularly overseeing the programs and also available for ideas or suggestions, either within the acquisitions community, the shipbuilding community, the Navy, or any of the above. I was going to ask you what the acquisition community was doing to ensure a stable design. Would you say this requirement board process is the center of what you are doing?

Dr. ETTER. I would not say it is the center; it is one aspect of it. It is one that is really driven more from the requirements side. Within the acquisition community, we have a number of things that we are doing to try to control costs. Certainly, one of the things that we are able to do early on is work through the acquisition strategy. If we are able to do multi-year programs and if we are able to do incremental funding for some of our larger systems, then that certainly helps us with costs because we can with multiple ships drive down the costs. The technology offramps are another example of what we do. Then we are constantly also looking to reduce requirements. Certainly, the requirement side is doing that but we also do that because our program managers are in many ways in the key position to see where changing a requirement slightly would impact the cost. We also have some programs where we have set aside dollars, where we work with industry to come up with ideas. I think in the submarine community, the capital expenditure (CAPEX) program is a great example. In the *Virginia* class, we have dollars that have been set aside and the contractors can propose things that they see that would allow us to cut costs. They make a proposal and if we agree then we will fund it. I think these are some of the examples of things that we have done. The bottom line of being ready to take off some capabilities if we need to is extremely important in order to stay on budget and on cost.

Senator TALENT. As you implement this, both on the acquisition and the requirement side, if you would share with staff here these concrete examples of successes that you are achieving, that would help us. I would like to be empowered with that as I make the case that you are using the money as efficiently as you can. I think that is important. We don't talk enough about our successes and you guys certainly get enough complaints about the failures or the problems. So, let's try to balance that out a little bit.

Secretary Etter, how is the industry responding? What kind of investments would you expect in response to this shipbuilding plan? We know how capital intensive this industry is. Does it depend on their confidence that you actually can do it and how would you describe that level of confidence at this point, in your view? I probably ought to get them here and ask them that, but I will get

your point of view. Just one other thing. What other actions are they taking to optimize shipbuilding and funding?

Dr. ETTER. I think having the shipbuilding plan should be very much a motivation to the industry because they can now, I believe, plan on longer-term stability. This is critical when you are going to do long-term investments. It is going to make a difference. We are still early in the process and I think it is going to be important that we show, as Admiral Locklear indicated, that we are committed to doing this. As far as some specific examples, I think I would ask Allison Stiller, who has a lot of discussions with the industry, on what she is hearing on this.

Ms. STILLER. Yes, sir. In the case of the submarines, that Dr. Etter referred to, we have a program that, within the shipbuilding contracts, allows the shipbuilders to come and propose facility improvements in their yards. They show return on investment to us like they would to a corporate board. That will help reduce the cost of the submarine and production. We have invested to date about $30 million in Electric Boat location, Quonset Point and Groton, as well as Newport News. We also had an incentive like that on the carrier contract for CVN 21. In fact, we co-invested in a facility with Newport News, to cut very thick steel, which is used on the flight deck. It is an incredible time saver. It has been a wonderful investment and we have seen it in action. We are also going to employ the same kind of incentive on DD(X) when we get into production on DD(X). But these are production type incentives that we are placing in the contracts. They have to show a return on investment. We give half the money upfront and half on the back end so that they are vested as well.

In the case of Northrop Grumman Ship Systems with Hurricane Katrina, they are relooking at their entire facility to see where there was damage, and how to best re-facilitize their yard. A piece of how they are going about that is the First Marine International study, the benchmarking study that came out last year. It is yard specific and gives them thoughts on how they can better lay out their yard to be more efficient. Another example is Bath Iron Works and the land level facility that they invested in over the last several years.

We have seen great improvements in the DDG procurement, coming down the learning curve and being able to outfit more on the land before you put the ship in the water. So, all of our yards have made some investments. Some have been co-shared with the Navy; some have been on their own; some have been State funded. In the case of Northrop Grumman Ship Systems with their facilities, this is their private insurance money that will cover the facilities but we are certainly working with them to give them thoughts.

Senator TALENT. If we do this plan and we certainly intend to do this plan, as I understand it and I have been briefed, we are talking 51 ships from the years 2007–2011. That is just 28 major combatant ships and 23 LCS. Which, unless I am reading it wrong, means that the picture for the next 5 years in terms of rate of production for the six first tier shipyards is basically going to be the same as it was the last 5 years in terms of rate of production. So, given the fact that we need to increase confidence, we are trying to encourage them to optimize.

We want them to know that the future is going to be different than the past. If that low rate of production, if I can call it that, is affecting their confidence, what impact do you think that is going to have on their ability to retain critical skills? Do you have concerns on those lines?

Ms. STILLER. I don't think that there are concerns on the critical skills other than the submarine design base that we talked about earlier. I think with this plan they can plan and know that we are committed to the stability and they don't have to worry year to year; "Are you serious?" "Is that ship really going to show up or not in the budget?" It does give them a long-range view over the FDYP, the 5-year view to be able to plan for facilities, investment, or how to shape the workforce best or what improvements you want to make in the shipyard. So, yes, it is a stable rate that we have seen in the past, but I think it gives them more of a commitment that this is the rate and we are not going to fluctuate the rate.

Senator TALENT. So, you think there has been an adequate buyin to this plan by the shipbuilding community, subject obviously to them having confidence that it will be carried out at a stable funding level. You have a fair level of confidence that industry will respond appropriately to this rate of production. You see what I am getting at?

Ms. STILLER. Yes, sir. I think we have to prove to them that we are committed to the stability. We have said it. This is the first year we have laid it out. We said we were going to build seven ships in fiscal year 2007 last year. We are saying that again this year. I think the proof is in the pudding and we have to continue to show that.

Senator TALENT. Again, it is essential that they see a plan and see it being carried out, which does suggest, Admiral Edwards and Admiral Locklear, that we get some pretty good idea of what this ramp-up is going to mean in actual dollars in the upcoming years, so that we can assure them as we do oversight that they are going to get that. Because we are going to challenge them and I don't have them in front of us right now.

At the second panel, we are going to talk about these things. We expect them to perform. They have been telling me for 3 years that if we get a stable and adequate SCN account, you work with them on requirement changes and requirement creep. Acquisition works with them. They can deliver and they can optimize. We can expect them to deliver and to optimize. I think we covered the submarine build rate.

Let's go to seabasing. I don't think it is any secret that I am still not as clear as I want to be on the seabase concept, Admiral Edwards. When Admiral Clark first outlined this as part of his concept for the Navy, it was the thing that I looked at and I thought, well I am not so sure. Things keep popping up that raise issues. For example, we had a hearing on lift. General Schwartz testified at that time that he had a priority that the seabase ships do not become single mission ships, just with seabasing. He felt they needed to support Transportation Command requirements also. They need to be lift vessels. Well, fine, but now we are talking about multi-mission ships with additional requirements and I am sitting

here saying to myself, do we have an agreement about what these capabilities of these ships need to be so that we can get a stable design?

Concerns are also being raised regarding vulnerabilities to the seabase. What kind of surface combatant strength are we going to have to devote to protecting them? So, the idea is an appealing one and I understand the Navy's desire to have this kind of inherent and organic capability. The Marines have told us that they would like to not to have to build the iron mountain. If you would, give me the current concept for the unique capability of a seabase, how those capabilities will be employed and safeguarded in a hostile environment and how you rank that capability among competing priorities. This is going to be a significant investment. Is it going to put pressure on our attempts to build surface combatants, submarines, and expeditionary strike capabilities and how would you address Transportation Command's concerns?

Admiral EDWARDS. Yes, sir. Let me try this approach. Let's talk about seabasing today. We have examples of how this worked in Operations Desert Storm, Iraqi Freedom, Hurricane Katrina, and also the tsunami relief in all those areas, whether you are talking humanitarian assistance or major combat operations or war.

Right now, seabasing requires a host nation support and a fixed port facility to get the whole Marine Corps Marine Expeditionary Brigade (MEB) and Marine Expeditionary Force (MEF) on the beach and into the fight. From World War II we had about 170 different bases around the world and it is down below 50 now. Or 29, somewhere in that area. So, we are losing the ability to operate the Navy-Marine Corps in a style that we have been accustomed to in the past. So, what we have to look at is seabasing tomorrow and in the 2015 timeframe, which is going to use the whole maneuver space of the ocean as our operational area. We will have carrier strike groups (CSGs), expeditionary strike groups (ESGs), and surface combatants. We will assemble in a seabasing arrangement. It will be a joint force with Marines and also availability for Army and Air Force to flow through that phase. We will go right from the assembly area at sea to the objective area. That is critical. It won't go ashore and this iron mountain will be at sea and we will assemble at sea and close the force from the sea. This is actually an asymmetric capability that we will use both in the global war on terror and for major combat operations.

So, I think as we see the world environment change this is a capability that we are going to need and one that we are very excited about and enthusiastic about.

Senator TALENT. If I can just—I don't want to interrupt you.

Admiral EDWARDS. No, sir.

Senator TALENT. But if it is a convenient point, let me ask you a couple of questions about what you have said. Let's take the humanitarian assistance role. Again maybe there is something I am missing here.

It certainly won't be the first time. But it would seem to me that for humanitarian assistance could we not expect cooperation from host countries? If the concern and reason we need seabasing is a concern that the next Turkey might not cooperate, is that risk great when we are talking about the humanitarian mission?

Admiral EDWARDS. This is a scaleable capability. We wouldn't need an entire seabasing capability to do humanitarian assistance.

Senator TALENT. All right.

Admiral EDWARDS. But in Indonesia, for example, there wasn't a lot of infrastructure there to fall in on.

Senator TALENT. So that was a case where a host country would cooperate but you just didn't have a secure base to operate from.

Admiral EDWARDS. Also, some areas are sensitive that the United States is on the horizon instead of over the horizon, where they operate out of sight. Somalia was another case where it was a tough time to bring in a maritime preposition force and then off-load in piers and other areas. This capability is one I think that will be used in the future. I think it needs different capabilities than the seabasing force that we have today. You have to be able to selectively off-load, instead of put it ashore and then select the capability you want to take out as you go forward.

The protection of this force is going to be paramount. We are going to have to dedicate our assets in order to do that. We will not let this force be assembled without a requisite defense for it. In that defense, it could be a carrier battle group. It can be another amphibious task group (ESG) or it can be surface combatants and submarines, which we have been deploying the ESGs with surface combatants in ESGs recently. So, the sea shield, both from surface, sub-surface, and ballistic missiles and cruise missiles, is going to have to be defended. What other priority would you have for it, if you had to use it?

Senator TALENT. Right. I can see that. If it is a major combat contingency, they are going to be there anyway probably.

Admiral EDWARDS. Yes, sir.

Senator TALENT. Let me follow up on that. It seems to me from what you described that most of the size of the seabasing capability that you are contemplating is mostly necessary because of the major combat contingency requirement. In other words, if you are just concerned about humanitarian assistance or the global war on terror, you might need a seabasing capability but not—I think you have 12 ships, you are anticipating. Most of that capability is because of the possibility of another Operation Iraqi Freedom or something like that.

Admiral EDWARDS. Yes, sir. To answer the question on General Schwartz as we go because I think there is an issue: seabasing is more than just the 12 ships. The Maritime Preposition Force (Future) (MPF(F)) is part of the seabasing concept, but it is not the whole concept. We are going to assemble the amphibious force. Part of that force would be the MPF(F). We have amphibious ships now, 35 of them. We have three maritime preposition forces, so that each one has about a MEB's worth of equipment on it that depending on what part of the world we are operating in, we can use that equipment. So, when we talk about seabasing, we are talking about the whole enchilada of capability here. You were right, if you are doing a global war on terror operation, then you need only one ship in that and some helicopters to do that or you may need the *Mercy* to be the seabasing focal point. It is scaleable, but it gives you—this capability will give that whole force the opportunity to do it

at sea and not assemble ashore. Sam, let me give you an opportunity too.

Admiral LOCKLEAR. Our number one joint partners are the Marines. The desire also was to be able to provide to the country about a two MEB forcible entry capability anywhere in the world, in 10 to 14 days in 8 to 10 hours of darkness, which are criteria the Marines say we need. We believe and the Marines believe that that is a capability that this country needs. So, as you look from the humanitarian size kind of seabase out to the joint seabases that you might realize in the future, as we lay dollars against that—one of our primary goals was to lay dollars against the seabase that enabled that capability first. That is if you take a look at how we designed and packaged the first—this thing that we call the seabase, with the 12 ships, it was designed around those criteria. Then we overlay the dollars on top of it. We made some trades to be able to get to where we are today with a technology that is available today.

Now, to answer General Schwartz's question, in my opinion, that is a connector issue. This seabase, when it is built, will be able to be used if the investment is made by the DOD and connectors that will get all the joint partners onboard. But for the foreseeable future, we and our Marine Corps partners believe that was the preeminent capability for the Nation that we had to buy first.

Senator TALENT. That is one of the reasons I am inquiring so specifically into this, other than my concerns about whether this should have the priority that the Navy has given it. I am frank in telling you that I am not yet convinced. I am going to keep looking at it. I don't know how the rest of the committee feels about it. It is also because we are still at that point, as you said earlier, 85 to 90 percent of the costs are being driven here. You mentioned the requirement boards and I told you what General Schwartz said to me. This early planning process has to be very joint and you are going to have to include the Air Force. If they really have these lift ideas in mind, we don't want to be working ourselves into a situation where we are having to do with these ships what we are having to do with these other ships, now that are further down the line. Let's get this vision concrete and let's get it resolved early and let's stick with it. We certainly don't want the cost of these to go up. So I would be interested, as you work with General Schwartz and your counterpart, Secretary Etter, in how you are going to resolve the needs for additional sealift that he wants to realize through these ships. Either we do that or we don't. I know they are not going to recapitalize all their sealift. I am still vague on all this but I think we need to work that piece through. Do you have a comment, Ms. Stiller?

Ms. STILLER. Yes, sir. Part of the MPF(F) squadron that we came up with as the family of ships includes the large, medium-speed roll-on roll-off ships, which the Army currently uses. So we were looking at the joint aspects of how you can make sure you are bringing an Army's worth of equipment into the fight as well. We have had discussions early on with the Air Force as well.

Senator TALENT. Yes, in fact, the staff had prepared a question for you, Dr. Etter, and you, Ms. Stiller, on exactly that question. How is the Department structured to manage the development and

procurement of the seabase to ensure the range of end-to-end capabilities are fully integrated and also support joint operations? Do you have any further comments you want to add on that?

Dr. ETTER. No, I think that covers it.

Senator TALENT. Okay. Well we have another panel. I have a question about LCS, but I think I will submit that for the record. I thank you for your candor and the real sincerity I see here and the high priority that you are giving to this whole plan. There is only one other thing I wanted to add and then you can add a comment on that and then we will be done with this panel. We have this whole process. It seems to me it needs to be infused with a sense of priority about getting this plan done on time, and at the cost that we projected. There is a culture issue involved in all this. The one thing I know about culture is that if it doesn't come from the top and consistently and people through the process don't see the priority given it from the top, it doesn't work. I am convinced that the CNO is absolutely sincere in this. Secretary Wynne is. I think you all are also. So, I don't know what importance you would attach to that, but I think the people you work with in the Department, in the Navy, and in industry need to see that you are making decisions that show you are going to hang tough in this thing. You want to comment on that Secretary?

Dr. ETTER. Yes, I would just add that we are very committed to this. One point I would like to make is that any changes in the plan really do perturb the whole thing because it involves so many things that as you start to move things around it really does send us back to the drawing board to look at the whole thing again. So, we think the stability of the plan is very critical as we move forward to try to show that we can build ships to that plan.

Senator TALENT. I agree and if that was a euphemistic way of suggesting that Congress needs to be onboard too and not force any changes, I agree. In view of that though, we can all anticipate that there could be things in the plan that are going to run into concerns here of various kinds. So, let's anticipate that well in advance, try and deal with Senators who may have concerns and work that into the plan, so we don't run into some huge problem. Then if the only unanticipated change in the plan is more money, I think we can all deal with that. We will continue trying to work to get that. Thank you, and we will take the second panel. [Pause.]

I thank the second panel for your patience. That first panel took a little longer than I anticipated, but I thought it was very useful. Our first witness in the second panel is Mr. Damien Bloor, Principal Consultant for First Marine International Limited (FMI) of the United Kingdom. You will probably get the prize for having come the longest way to testify this year. Mr. Bloor, we are very grateful to you for doing that.

Our second witness will be John F. Schank of the RAND Corporation. We are very interested in your comments about shipbuilding.

Mr. Bloor, please.

STATEMENT OF DAMIEN BLOOR, PRINCIPAL CONSULTANT, FIRST MARINE INTERNATIONAL LIMITED, UNITED KINGDOM

Mr. BLOOR. Thank you. Chairman Talent, I am a Principal Consultant with FMI, which is a UK-based, independent, specialist shipyard consultancy. In 2004, FMI was contracted by the Office of the Deputy Under Secretary of Defense for Industrial Policy to assist with the Global Shipbuilding Industrial Base Benchmarking Study.

We were tasked to use the FMI benchmarking system to compare the practices of six large U.S. shipbuilders and seven leading international shipbuilders in Europe and Asia. Then to suggest changes to U.S. industry processes and Navy design and acquisition practices that would improve the performance of the naval shipbuilding enterprise as a whole. The study found that the overall average best practice rating for the six U.S. yards has increased substantially since 1999 although individual U.S. yards still have large gaps in some key areas.

At the industry level the technology gap with the international shipbuilders is closing. Estimates of U.S. shipyard productivity indicated that although productivity generally lags behind international yards, there is a wide range across the industry. The core productivity of some yards compares well to builders of naval vessels overseas. However, the performance drop-off that occurs on the new first-of-class and vessels built earlier in a series appears to be much higher.

The analysis also indicated that the naval acquisition practices increased shipyard work content by between 10 and 15 percent above commercial norms. This has been called the customer factor.

It also appears that U.S. naval vessels tend to be more complex and have more work content per unit of volume than some similar international vessels. There are few deficiencies in physical infrastructure. But in general, the industry is now well-equipped to achieve good levels of productivity. However, there are major opportunities to improve in the "soft" areas including design, production engineering, planning, estimating, logistics, accuracy control, and the organization of work. Deficiencies in these areas result in high levels of inherent work content, low productivity, high first-of-class performance drop-off, and poor cost and schedule adherence.

The responsibility of the majority of the improvement suggested in the study report principally, in our opinion, lies with the industry. However, Congress, the Navy, and other Government departments could help. By engineering designs to reduce work content without compromising functionality, working with industry to develop pre-production processes to reduce first-of-class performance drop-off, review the acquisition rules, regulations, and practices to identify opportunities to reduce the customer factor stabilizing the ship acquisition program, improving shipyard incentives, and continuing to support performance improvement initiatives.

In order of magnitude an estimate of the value of the potential savings confirms that there is considerable benefit in reaching the targets suggested in the report. A realistic timeframe to do this would be in the order of 5 years. We are currently engaging in part two of this study, which is focused on the military yards. I hope

that you have found part one to be useful. I would be happy to answer any questions you may have. Thank you.

[The prepared statement of Mr. Bloor follows:]

PREPARED STATEMENT BY DAMIEN BLOOR

First Marine International Limited (FMI) is a small, United Kingdom (U.K.)-based, independent, specialist maritime consultancy company formed in 1991. FMI consultants are, in the main, professional naval architects and marine engineers with shipyard management experience and knowledge of a wide range of shipbuilding market sectors. Members of the team have worked on projects in over 50 countries and were first involved together in the 1970s in the design and engineering of the some of the largest and most successful shipyards in the world.

In June 2004, FMI was contracted by the Office of the Deputy Under Secretary of Defense (Industrial Policy) (ODUSD(IP)) to assist with the Department's Global Shipbuilding Industrial Base Benchmarking Study (GSIBBS) Part 1. FMI was tasked to:

1. Compare the practices of the six U.S. first tier shipyards and seven leading international commercial and naval shipbuilders in Europe and Asia.
2. Identify specific changes to U.S. shipbuilding industry processes and to U.S. Navy design and acquisition practices that would improve the performance of the shipbuilding enterprise.

The FMI shipyard benchmarking system was used to make the comparisons as it was in a similar study in 1999/2000. The system allows the processes and practices applied in individual shipyards to be compared to others and to international best practice on a consistent basis.

The study found that the overall average best practice rating for the six major U.S. yards has increased from 3.1 in 1999/2000 to 3.6 in 2004. This is similar to the rates of improvement demonstrated by leading international commercial builders and confirms that there has been a marked increase in the rate of improvement in the U.S. yards over the last 5 years. This is the result of substantial capital expenditure by several yards and a concerted, industry-wide effort to employ higher levels of technology. Although individual U.S. yards still have some way to go, and there are some large gaps in key elements, at an industry level the technology gap with the international shipbuilders is closing. Some U.S. yards have clear strengths and the benchmarking team was impressed by the improvements that have resulted from the efforts of the last 5 years.

Indicative estimates of U.S. shipyard productivity were made using a combination of proprietary and public domain data. The estimates took vessel complexity and the additional work that the shipyard is required to do as a consequence of working on Government, rather than commercial, contracts into account. This has been named the "customer factor" and was estimated to be between 10 percent and 15 percent for most U.S. naval vessels types. The analysis indicated that there was a wide range of productivity being achieved across the industry and that the core productivity of some yards compared quite well to builders of similar vessels overseas. However, the performance drop-off that occurs on a new first-of-class appeared to be much higher.

The analysis of vessel work content indicated that U.S. naval vessels tend to be more complex and have more work content per unit of volume than some similar international vessels. Cost, risk, first-of-class performance drop-off, and the probability of cost and schedule overrun, all increase with vessel complexity. Therefore, if exposure to all of the above is to be minimized, overly complex vessels should be avoided.

Some observers have commented that as the commercial vessels built by naval shipbuilders tend to be expensive, they must inherently be constructing equally expensive naval vessels. Other studies by FMI have shown that a naval builder can provide good value for money in the construction of naval vessels but be unable to compete in high-volume commercial markets. This said, both navies and naval builders can undoubtedly continue to make improvements by studying the most successful commercial models.

Although there are a few infrastructure deficiencies, putting aside the effects of Hurricane Katrina, the industry is now generally well equipped to achieve internationally comparable levels of productivity in naval construction. However, there are major opportunities for improvement in the 'soft' areas including design, production engineering, planning, estimating, logistics, accuracy control, and manpower and organization. Deficiencies in these areas results in high levels of inherent work

content, high first-of-class performance drop-off, and poor cost and schedule adherence. The report titled "First Marine International findings for the global shipbuilding industrial base benchmarking study," which presents FMI's findings in full, contains suggestions for improvements that can be effected through industry collaboration. Suggestions for individual yards have been made in proprietary shipyard reports.

The responsibility for the majority of the improvements suggested principally lies with the industry; however, Congress, the Navy and other Government departments could take action to assist. The principal suggestions for the Navy and Government are:

- Gain a more in-depth understanding of the relationship between ship specification, complexity, and work content, and work with the design authorities to reduce the inherent work content of naval vessels while not compromising functionality.
- Work with industry to develop the pre-production processes to reduce first-of-class performance drop-off.
- Review the acquisition rules, regulations, and practices to determine if each adds value and work with the shipyards to find ways to reduce the effect these have on shipyard work content (i.e., reduce customer factor).
- Stabilize the ship acquisition program.
- Improve shipyard incentives.
- Continue to support performance improvement initiatives such as the National Shipbuilding Research Program (NSRP).

The proposals made in the study are aimed at both improving shipyard productivity and reducing work content by:

- Increasing the use of best shipbuilding practices in U.S. shipyards,
- Making more effective use of the technology employed,
- Optimizing ship designs to reduce work content in U.S. naval vessels,
- Reducing the customer factor,
- Reducing first-of-class performance drop-off, and
- Improving the acquisition environment.

An order-of-magnitude estimate of the value of the savings that can be made confirms that there would be considerable benefit in reaching the targets suggested in the report for the above actions. The time required to achieve the targets will depend on the motivation of the industry, Navy and Congress, and the availability of funding. However, a realistic time-frame would be in the order of 5 years.

Senator TALENT. Thank you. Mr. Schank.

STATEMENT OF JOHN F. SCHANK, RAND CORPORATION

Mr. SCHANK. Mr. Chairman, thank you for inviting me to appear before you today to discuss issues related to the future of the United States naval shipbuilding industrial base.

For almost 15 years, we at the RAND Corporation have been exploring these issues in a number of studies funded by the United States Navy. Because of that experience, in 2001 we were asked by the United Kingdom's Ministry of Defense (MOD) to aid in conceiving and evaluating acquisition options for a new class of destroyers. They are Type 45s. Since then we have completed several other studies for the MOD, including supporting their future carrier program, their *Astute* submarine program, and an overall analysis of their shipbuilding industrial base.

Mostly, these projects have been directed either by myself or by my colleagues, Mark Arena, who is here with me today, or John Birkler, who could not be here. We have prepared a summary of the messages for the MOD that we derived from our research for that agency. These include the need for long-term planning and its implications, ways to achieve design and production efficiencies, and the need to sustain resources. We have submitted our statement to be entered into the record.

I will confine my spoken remarks to four of the nine potential lessons for the U.S. industrial base. We elaborate on all our recommendations and all the lessons in the written statement. These recommendations are tentative because we have not made a thorough study of the U.S. shipbuilding industry, but on the basis of our current knowledge and pending further research they represent some actions that could merit further consideration.

Mr. SCHANK. Our first recommendation would be to smooth out demand peaks and valleys over the design and production cycle for each ship type by planning over the long-term. By long-term, we mean decades. We do not mean years. This should be done simultaneously for all ship types, so that the inevitable peaks and lulls of one type of ship can be balanced against those of another type of ship. It should be done simultaneously across all shipyards. This requires a centralized Navy plan across all programs.

Second, we view competition as one approach to acquisition, not the approach. It is desirable that shipyards specialize, and in a market with a limited number of shipyards, competition may not always be feasible. A different view of competition may also be appropriate, rather than competition for work share, the way we typically think of competition. Competition could be directed for profit levels, award fees, or different shares or percentages of the work share. Also, competition could be conducted at the parent corporation level versus the individual shipyard level. This is one of the lessons we saw in the United Kingdom, where instead of contracting with the shipyards, they would contract with the parent company allowing the parent company to make decisions on allocation of workload across shipyards, depending on the situation at the time.

Third, protecting and enhancing the design and integration industrial base. We have already talked a little bit about the submarine design base. As it has been mentioned, we at RAND are doing that study. Mark Arena and I are leading that effort. We know if there are long gaps between new ship designs within a class of ship, design and integration skills may be lost. These may be difficult to reconstitute. It is not just because there is a loss of domain knowledge. What is almost as important is the experience level of that knowledge. What we see with successful programs is a combination of the main knowledge and experience in the field. This is particularly true for complex platforms that specialize in capabilities such as submarines and nuclear propulsion. Here solutions may require a consolidated view of shipbuilding versus a shipyard specific view. That is, rather than focusing on a shipyard, we need to focus, we believe, on the industry and look at it from an industry perspective.

Senator TALENT. You mean in terms of preserving design capabilities. Look at it as an industry rather than within shipyards?

Mr. SCHANK. Yes, sir.

Senator TALENT. You are focusing on design capabilities as opposed to other parts of the production process. So you think that is crucial in terms of——

Mr. SCHANK. We think design is the most difficult capability to reconstitute. Design, testing, and integration—we think they are

the most difficult skills, and the most critical skills, the hardest to reconstitute.

Fourth, and my last point: Resist any impulse to shift more responsibility for assuring safety and performance to the private sector. DOD should not offer shipyards greater autonomy in making safety and performance-related decisions. If the yard takes on more liability for risk, contracting arrangements not withstanding, it is the Government who is the ultimate risk bearer and should remain responsible for cost-benefit tradeoffs and safety considerations. Note that these responsibilities require a sufficient cadre of skilled personnel to provide technical authority and oversight of design and production programs. Technical skills have to exist not only in the shipbuilding industrial base but also within the Navy to make technical decisions on safety and performance and to oversee the programs.

Mr. Chairman, I would like to thank you for the opportunity to address the committee today. I will be happy to answer any questions you might have.

[The prepared statement of Mr. Schank follows:]

PREPARED STATEMENT BY JOHN SCHANK[1]

Mr. Chairman and distinguished members of the committee: Thank you for inviting me to appear before you today to discuss issues related to the future of the U.S. naval shipbuilding industrial base. For almost 15 years, we at the RAND Corporation have been exploring these issues in a number of studies funded by the U.S. Navy. Because of that experience, in 2001 we were asked by the United Kingdom's (U.K.) Ministry of Defence (MOD) to aid in conceiving and evaluating acquisition options for a new class of destroyers, and we have since then completed several other studies for the MOD (see the appendix). Most of these projects have been directed either by myself or by my colleague John Birkler, who could not be here today, but I need to acknowledge the work of numerous RAND staff and other associates whose names I won't mention but who were responsible for the bulk of the research effort.

I am going to focus on the work we have done for the U.K. MOD, because this work has particular relevance for decisions to be made at the strategic level about the future of the U.S. naval industrial base. Over the next decade and a half, the U.K. will embark upon its largest naval shipbuilding program in many years. This effort will be challenging, because it follows a period of reduced warship demand that has led to consolidation and reduction in the capacity of the U.K. shipbuilding industrial base and in the oversight resources available to the MOD. Demands on the U.S. naval shipbuilding industrial base have also been falling, resulting in concerns, for example, about the submarine design base. At the same time, the United States also faces a likely future increase in demand, as the Navy builds to a 313-ship fleet. Let me review some of the suggestions we made to the U.K. MOD in three respects—the need for long-range planning, ways to improve efficiency, and the need to sustain hard-to-replace resources—and then I will conclude with some possible implications for the United States.

THE NEED FOR LONG-TERM PLANNING

One of the most important findings that has consistently arisen from our research for the MOD was the importance of a comprehensive, long-term MOD shipbuilding strategy or plan. By a strategic plan, we mean one that would require that the MOD define its shipbuilding goals and future courses of action for the next several dec-

[1] The opinions and conclusions expressed in this testimony are the author's alone and should not be interpreted as representing those of RAND or any of the sponsors of its research. This product is part of the RAND Corporation testimony series. RAND testimonies record testimony presented by RAND associates to Federal, State, or local legislative committees; government-appointed commissions and panels; and private review and oversight bodies. The RAND Corporation is a nonprofit research organization providing objective analysis and effective solutions that address the challenges facing the public and private sectors around the world. RAND's publications do not necessarily reflect the opinions of its research clients and sponsors.

ades, establish a schedule or roadmap to achieve its plans, and identify future investments that would be needed, for example in facilities or workforce skills.

A strategic plan would help eliminate the "boom and bust" cycle that has plagued ship production and design in the United Kingdom. It would allow the MOD to make more efficient use of shipyard facilities and workforce skills and exploit the government's "smart buyer" expertise. It would help the MOD better understand the financial implications of its acquisition strategy and anticipate problems by allowing it to independently assess shipyard demand. It should also lead to reduced cost and schedule risk through greater program certainty.

IMPLICATIONS OF LONG-TERM PLANNING

Long-term planning would obviously have implications for how the MOD would manage the industrial base, and we have made some specific suggestions in that regard. First, we recommended that the MOD attempt to smooth, or "level-load," the production and design demands it places on the industrial base. Several factors specific to each class of ship would affect the loading. These include the interval between ship starts, the time required to design the first of class and to build each ship, the fleet size desired, and the expected time in service. Among the benefits of level-loading would be better workforce and facilities use, more stable costs, and a greater ability of the industrial base to make long-term investment decisions.

Second, we observed that long-term planning might force the MOD to reevaluate its pro-competition policy. To best use the industrial base, competition might not always by the appropriate option. In some cases, there might not be enough viable contractors to enable competition—or, perhaps more to the point, enough contractors to let one of them lose. For some classes of ship, it might be in the MOD's interest to allocate work across shipyards. Competition would likely remain a viable option in most cases, but the desire to achieve it should be only one factor in considering how best to achieve value for money over the long term. (I will have more to say about competition later.)

Third, to understand all the factors impinging on its plans, the MOD would have to work more closely with industry than previously. That might require the MOD to supply industry with more information regarding plans, budgets, and procurement options. But the result should be reduced risk in shipbuilding programs because the government would have more certain understanding of industrial capacity, as well as better progress indicators, such as earned-value metrics. At the same time, long-term planning might also encourage shipyards to work more closely together as they act to use complementary skills and facilities, promote skill synergies (such as for design), and give the MOD procurement options which result in greater industrial efficiencies.

Finally, any long-term plan would have to be integrated across the MOD's own ship-acquisition entities. Currently, each class of ships is the purview of its own integrated project team, which makes acquisition decisions independent of the actions of other teams. Because one yard may build ships of different classes, a plan that accounted for multiple classes would be necessary if the total demand load on a yard is to be leveled over time.

WAYS TO ACHIEVE DESIGN AND PRODUCTION EFFICIENCIES

Based on our research, we have also suggested the MOD consider a number of ways to improve its design and production efficiencies, within the context of a long-term shipbuilding strategy. We made five such recommendations.

First, the MOD should sustain its practice of placing multiship contracts to provide industry with incentives for training and long-term facility investment. Because they have received only limited orders for new ships and have faced a highly competitive market in recent years, many U.K. naval shipyards have not modernized facilities. Only with long-term contracts and prospects will the shipyards be able to justify this type of major investment. Such investments should permit greater efficiencies, which should result in savings to the MOD. It should be kept in mind, however, that such long-term contracts work better for mature designs and, therefore, may not always be appropriate for the first-of-class ship.

Second, the MOD should facilitate a discussion among the shipyards and related firms about whether the industry should adopt a common, interoperable set of design tools or develop industry standards that would allow design work to be easily interchanged. As the MOD's shipbuilding program unfolds, U.K. shipyards and firms will probably need to share design resources. One difficulty in such sharing is that shipbuilders and design firms often have different computer-aided design and manufacturing tools. Thus, interchanging data and working cooperatively on a common design are difficult. Common design tools or standards for commonality would

lead to common product models and databases and would benefit the MOD in life-cycle logistics support.

Third, the MOD should work to mitigate peak demands that, in spite of careful planning, arise to strain, if not exceed, industrial capacity. Several mitigating options are available. Increasing the use of outsourcing would decrease the labor required to be resident in a shipyard. Subcontracting peak demand work to smaller shipyards with excess capacity could ease the burden on yards operating at capacity. Also, the MOD could consider relaxing the current defense industrial policy to allow peak workload to be performed outside the United Kingdom.

Fourth, the MOD should recognize and try to reduce the high number of design and contract changes introduced after production has begun. These have been blamed for schedule slippage and cost increases in recent naval shipbuilding programs. The MOD could help itself out by ensuring that designs are mature before proceeding into production. The MOD could also speed production by responding more quickly to changes proposed by the shipyard to save time or money.

Fifth and finally, the MOD could encourage other best practices to reduce cost and shorten build schedules. Our research has highlighted the potential benefits of increasing the use of advance outfitting in warship construction and encouraging the use of greater outsourcing, where appropriate. Notably, both of these require a mature design prior to production, which should by itself reduce cost and schedule slippage. Additionally, the use of commercially available equipment may be less costly than equipment conforming to traditional military standards and thus could be preferable if operations or safety are not adversely affected.

SUSTAINING RESOURCES

The desire to realize efficiencies should not, however, take precedence over the need to sustain design and production resources and oversight responsibilities over the long term. The MOD is emerging from an experiment in transferring responsibilities to the private sector that the private sector had insufficient incentive to exercise. The idea was to shift as much risk as possible to the prime contractor and, at the same time, as much of the authority for design decisions as possible. Not coincidentally, the MOD was losing the resources necessary to maintain design skills and, to some extent, oversight skills in house.

In the case of the *Astute* submarine, the results of this experiment were unsatisfactory, as the terms of the prime contract for the first of class had to be dramatically revised after considerable cost escalation and schedule delays. The effect was to explicitly transfer the responsibility for the risk back to the MOD, where, as this turn of events demonstrated, it lay implicitly all the time anyway.

We drew three lessons from this experience. First, as desirable as fixed-price contracts may generally be, the MOD should not let such contracts for high-risk, first-of-class designs of technically demanding projects. On the contrary, the MOD should consider dividing the project into different segments (steel-working, outfitting, etc.) and putting these up for separate, competitive bids. This is one way to maintain competition in an industry subject to short production runs.

Second, the MOD must retain sufficient design and oversight expertise in house to see that its objectives are being met and to responsively engage the contractor. The MOD must be able to make technical decisions on issues that arise concerning tradeoffs between cost and performance or cost and safety. The MOD cannot expect a contractor, in making such tradeoffs, to arrive at the same results the MOD would. By the same token, the MOD must have the expertise to estimate costs independently.

Third, the MOD must support the retention of design skills not only in house but by industry during periods of low demand for such skills. The atrophy of design resources in the attack submarine case played some role in the problems encountered with the *Astute*. Design skills might be retained through "spiral development," that is, continuous design improvement, of a current class of ship, through continuous conceptual design of hypothetical future classes, or through development of prototypes. There might also be a role for collaboration with other countries facing peaks and troughs of design resource demand. The MOD must have, as well, the inhouse resources to support the R&D that will permit future advances in ship design.

LESSONS FOR THE UNITED STATES

Now, what does all this mean for the United States? There are two important ways in which the U.K. and U.S. shipbuilding environments are similar. First, as I mentioned earlier, both countries are having to deal with the issue of sustaining design resources during lulls between classes at the same time, as they will be ramping up production for several classes of ship. Second, in both countries, naval

demands dominate the shipbuilding sector. Neither country builds large ships for the global commercial or warship export markets. Thus, the MOD in the United Kingdom and the Department of Defense (DOD) in the United States essentially set demand conditions for the National shipbuilding industry: They decide the nature of the programs in terms of their number and size; the nature of the market, that is, whether it's run by competition or allocation; and, at least indirectly, the number of firms that will survive.

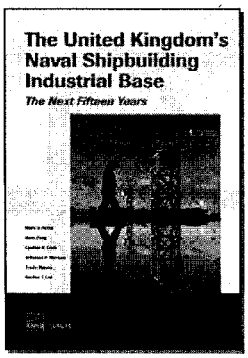
Considering these similarities, we here make some tentative recommendations for the U.S. industrial base. They are tentative because we have not recently made a comprehensive study of the U.S. shipbuilding industry, but on the basis of our current knowledge, these are some actions that could merit consideration by DOD, pending further analysis:

- Smooth out demand peaks and troughs over the design and production cycle for each ship type by planning over the long term—that is, decades, not years. This should be done simultaneously for all ship types, so that the inevitable remaining peaks and lulls for one type can be balanced against lulls and peaks for another. Such planning must take into account the production interval, build duration, desired fleet size, and platform life for each class. Plans should hedge against risk by recognizing gaps that may be caused by lower-than-expected funding and how to mitigate them.
- Incorporate shipyards' prospects for obtaining non-Naval shipbuilding clients into long-range planning. The U.S. Coast Guard, for example, will be undertaking a shipbuilding program of substantial scope, though the ships will not involve the same demands as the large Navy ships do. At the same time, foreign military sales can be expected to decline.
- Resist any impulse to shift more responsibility for assurance of safety and performance to the private sector. DOD should not offer greater autonomy in making safety- and performance-related decisions at the price of more liability for risk. Contracting arrangements notwithstanding, the government is the ultimate risk-bearer and should remain responsible for cost-benefit tradeoffs.
- Make competition optional. Competition should not be the default method for obtaining value per dollar for certain ship types. It is desirable that shipyards specialize, and in a market with a limited number of yards, competition may not always be feasible. Competition is better achieved during the design phase or through subcontracting large segments of the production process.
- Be prepared to close and consolidate industry elements, however politically unpalatable. It may be true that every element makes some unique contribution, but it may not be true that every such contribution is worth what it takes to sustain it. In particular, it may be difficult to support a multifirm design base. At the same time, some thought should be given to maintaining diversity in the industrial base, so yards should not be closed simply on financial grounds. It may be that what is needed is not fewer shipyards but smaller ones.
- Protect and enhance the design and integration industrial base. With classes for some ship types following each other at longer intervals, design and integration skills may be lost. These may be difficult to reconstitute, particularly for such specialized capabilities as nuclear propulsion or submarines. Options for sustaining the design and integration base include spiral development and the design of prototypes or one-hull classes.
- Consider collaboration with key allies. It may be that, in a time of uncertain and variable demand, sharing industrial base resources with a trusted ally will, for certain ship types or equipment items, reduce costs with no security-related drawbacks.
- Standardize design tools across yards and the government. Using the same computer-aided design and manufacturing tools, or tools with compatible formats, could enable more rapid responsiveness on change requests and more seamless and economical collaboration across shipyards.
- Encourage more outsourcing and advance outfitting. For maximum effectiveness at enhancing efficiency, subcontractors should be involved as early as possible in the design-and-build process, and, where possible, large ships should be built in blocks that are mostly outfitted before they are assembled.

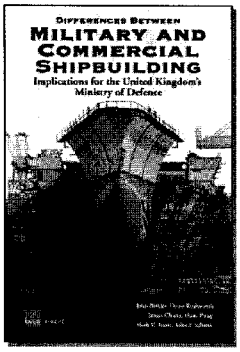
I would like to thank you again for the opportunity to address the committee today, and I will be happy to answer any questions you might have.

Appendix
RAND Europe Shipbuilding Research Summary

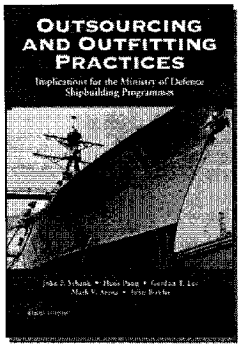
RAND research commissioned by the UK Ministry of Defence has fallen into two specific categories—discrete and comprehensive analysis. The discrete studies examined specific MOD shipbuilding programmes or challenges to determine such things as how to best acquire specific warships, employ specific production techniques, or measure progress or effectiveness. The comprehensive studies looked at broader aspects of the shipbuilding programme such as the capacity and robustness of the naval shipbuilding industrial base and its ability to move into other markets, like commercial shipbuilding. The following paragraphs summarise each of the specific research projects to date, highlighting their purpose and key findings. Full citations are given at the end.



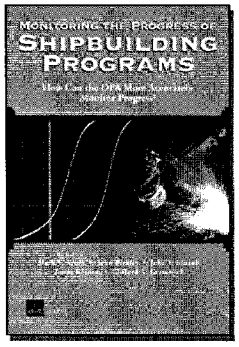
The United Kingdom's Naval Shipbuilding Industrial Base: The Next Fifteen Years: In this study, the MOD wished to know whether the UK's existing naval shipbuilding industrial base had the capacity to meet the requirements of the planned naval programme. Using extensive surveys and a breadth of data, RAND Europe researchers evaluated the capacity of the UK naval shipbuilding industrial base and the effect of alternative acquisition requirements, programmes, and schedules on it. Given the MOD's shipbuilding plan at the time, the researchers focussed on its potential impact in the areas of labour, facilities, and supplier demand. Overall, they found that, in the context of the 2004 planning assumptions, the overlap of certain large programmes would cause a near-term peak in workload demand, followed by a steady decline in production labour demand. An exception to this was the demand pattern for technical workers, which would show an initial decrease followed by a rapid upswing. RAND also conducted an analysis of whether existing facilities could meet future MOD programme demand and suggested areas where further investigation was necessary. Finally, RAND surveys of both shipyards and suppliers indicated that an increased workload would not be problematic for the supplier base. To minimise such inconsistencies and concerns, RAND Europe suggested that the MOD in the near term consider, among other options, shifting the scheduling of the labour demand ("level-loading"), examining other options to meet peak demands, and using alternative facilities to assist major construction during peak workload times. For the long term, the researchers recommended, among other alternatives, that the MOD regularly obtain industrial planning perspectives as part of its strategic process, define an appropriate role for the UK's supporting offshore industry, reconsider the feasibility of its competition policy in light of industrial base constraints, and explore the advantages of interoperable technologies for sharing design work.



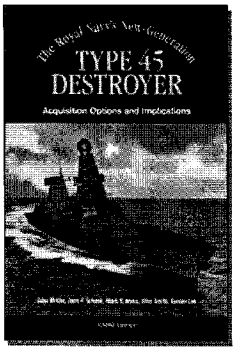
Differences between Military and Commercial Shipbuilding: Implications for the UK's Ministry of Defence: One apparent challenge within the UK shipbuilding industrial base is that it relies almost entirely on a single customer – the MOD – for survival, which could limit motivation to improve in efficiency or advance the state of the shipbuilding art. As such, the desire for a continuing efficient and robust shipbuilding industry prompted the MOD to request an assessment of the UK shipbuilding industry's ability to compete more broadly in commercial or foreign military markets. Based on literature reviews, a survey of shipbuilders, and interviews with shipyard personnel, RAND Europe found that the prospects for broadening UK shipyards' customer base were poor. The UK would face strong competitors in attempting to re-enter the commercial shipbuilding market. RAND researchers concluded that the UK has a stronger industrial base to support naval export sales than it does in the commercial arena, but that the match between most current UK military ship products and global demand is not a close one. The naval export market is largely focused on modestly priced frigates, economic exclusion-zone patrol vessels, and small conventionally powered attack submarines. UK warships are, in general, more complex and expensive than potential buyers demand, and the industry does not currently produce non-nuclear submarines. The researchers noted that although events within the shipbuilding industry may break in the UK's favour, development of new designs and technologies would require investment – of high risk and low probability of payoff – by shipbuilders and equipment suppliers, and the government.



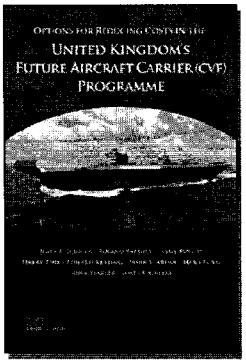
Outsourcing and Outfitting Practices: Implications for the MOD Shipbuilding Programmes: This study focused on the risks of current UK shipbuilding practices and the cost implications of using alternative manufacturing options for CVF. Based on a literature review on outsourcing and advanced outfitting, RAND researchers found, in general, that UK shipbuilders should continue to use their current subcontracting practices but should also take advantage of standards such as those used in commercial advanced outfitting in the rest of Europe and Asia. These standards focus on the extensive use of subcontracting and installation and assembly at the earliest possible construction phase. They encouraged MOD shipbuilding programmes to identify subcontractors as early as possible and to subsequently include them in the design process. By taking advantage of commercial production practices, RAND suggested that the MOD could produce their ships more effectively and efficiently, preserve the UK's military ship industrial base, and maintain the production schedules of other warships being built for the Royal Navy.



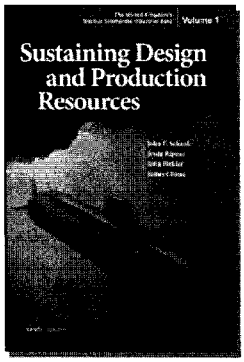
Monitoring the Progress of Shipbuilding Programmes: How Can the Defence Procurement Agency More Accurately Monitor Progress: As part of the annual assessment of its large projects, the MOD measures "slippage" – the delay between a promised in-service date and the actual or projected in-service date. In response to the slippage of some recent shipbuilding programmes, as well as difficulty distinguishing programme delay, RAND Europe was asked to analyse how major shipbuilders and contractors monitor programme progress, to consider what information would be useful for shipbuilders to provide the agency, and to help clarify the reasons for late ship delivery and differential schedule performance between commercial and military shipbuilders. After surveying major US, UK, and other European shipbuilders, the researchers found that earned-value management was the most common method used to monitor progress. From this and other metrics and procedures observed, RAND Europe recommended that the DPA consider adapting some of the current commercial practices, including incentives for on-time deliveries and the use of on-site representatives to quickly resolve late decision changes.



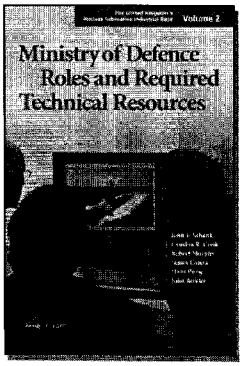
The Royal Navy's New-Generation Type 45 Destroyer: Acquisition Options and Implications: In 2001, the MOD commissioned RAND Europe to analyse the costs and benefits of alternative acquisition paths and evaluate near-and long-term strategies that would yield the highest value, encourage innovation, use production capacity efficiently, and sustain the UK's core warship industrial base when procuring the Type 45 destroyer. RAND researchers used future demand data for Royal Navy ships, commercial work and naval exports, and the existing capacities of select UK's shipbuilders to qualitatively and quantitatively evaluate the effects of various options to acquire and build the Type 45. More specifically, the analysis involved a comparison of the advantages and disadvantages of: having one or two shipbuilding companies produce the Type 45 over the next 15 years; allocating work competitively or directly in the case of two producers; and whole-ship versus block production. The researchers found that competitive production of the Type 45 at two shipyards would likely yield approximately the same overall cost as sole-source production at one shipyard and made recommendations regarding block production and direct allocation of the work.



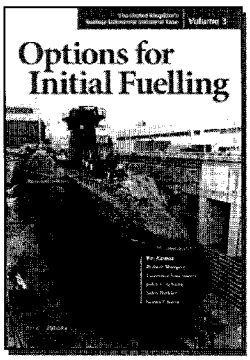
Options for Reducing Costs in the UK's Future Aircraft Carrier (CVF) Programme: Prior to the MOD's selection of an alliance to manage the prime contract for the CVF, RAND Europe was asked to examine available design and manning data to suggest reductions in whole-life costs and manpower requirements of the carriers. The research found that to reduce acquisition costs, the MOD should exercise options such as using construction practices from the commercial industry together with commercially available equipment in place of military standard equipment, given no adverse impact on operations or safety. Regarding personnel cost savings and complement-reducing initiatives, the researchers endorsed the practices of both private-sector shipbuilding companies and other navies. They also made several recommendations including promotion of a cross-trained workforce and using civilians to augment the ship's crew for non-warfare responsibilities. Options suggested for reducing the complement examined the trade-offs of increased up-front investments in technology with the corresponding manpower reductions.



The United Kingdom's Nuclear Submarine Industrial Base. Volume 1: Sustaining Design and Production Resources:. The construction of the *Astute*-class attack submarine presents complex and unique challenges that require special skills, facilities, and oversight not supported by other shipbuilding programmes. Therefore, the MOD expressed concern about the vitality of the submarine industrial base due to recent trends such as budget constraints and a lack of long-term focus on industrial base efficiencies by naval planners. RAND researchers designed analyses to determine the actions that should be taken firstly to maintain nuclear submarine design capabilities, and secondly to schedule nuclear submarine production for efficient use of the industrial base. Design and production profile assessments indicated that there was the potential for a significant loss of specialist nuclear submarine design and production skills due to insufficient programme demands. Further, recovery of these skills for future programmes, if possible, would likely be expensive and problematic. RAND Europe researchers concluded that the risks to the submarine design base could be mitigated by evolving the development of the *Astute*-class, utilising continuous design work, and through design collaboration with the United States or another submarine-producing country. To sustain the production industrial base, RAND Europe recommended that the MOD alter the dates for commencing the follow-on SSBN and the MUFC to produce overlaps and long-term production. These overlaps would likely smooth not only the total production demand but also the demand for broad skill categories, help promote operation at peak efficiency, and potentially reduce production costs by 5-10 percent per boat.



The United Kingdom's Nuclear Submarine Industrial Base. Volume 2: MOD Roles and Required Technical Resources: Historically, the MOD has exercised significant authority and responsibility in design, development, and integration of its nuclear submarines. However, in a push for a smaller role for government, the MOD transferred much of its acquisition responsibility to industry. With past cost and schedule problems confronting the Astute-programme, RAND Europe was asked how the MOD could best reengage in effectively overseeing submarine design and production. RAND researchers suggested appropriate roles for the MOD in partnership with its prime contractor for each phase of future submarine acquisition. Based on management best practices, they proposed a middle-ground alternative approach—a 'partnership' model—between the hands-on and hands-off acquisition models used in the past. While acknowledging the progress made in this regard, they suggested changes to the evolving MOD acquisition structure, new staffing levels, and ways to address some potential impediments, such as the loss of submarine expertise within the MOD.



The United Kingdom's Nuclear Submarine Industrial Base. Volume 3: Options for Initial Fuelling: The final report in the series focussed on options for initial fuelling for the *Astute* programme. Cost increases in maintaining regulating licenses at both BAE Systems' Barrow-in-Furness shipyard and Devonport Management Limited (DML) prompted the MOD to consider consolidating its nuclear fuel-handling capabilities at the existing DML site. RAND researchers concluded, however, that consolidation would have complex implications for cost and scheduling of the *Astute*-class programme, which is already in progress. They compared various aspects of the two shipyards in regard to three cases hypothesized for distributing the share of *Astute*'s fuelling between the yards. As a result of this analysis, it was recommended that the MOD not consider refuelling the *Astute* first-of-class at DML. The researchers further considered an arising BAE Systems' proposal to fuel the submarines at Barrow in a way that reduces the risks of nuclear accidents, and recommended that MOD officials take immediate action in reviewing the proposal. They also suggested that the MOD promptly examine the transportation challenges associated with moving the *Astute* submarines from the Barrow docks to the open sea.

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Senator TALENT. First of all if the staff or you, whichever is the most convenient place to do it, would get me a written copy of the summary.

Mr. SCHANK. I will.

Senator TALENT. If you could get me that I would appreciate that. You mentioned that—your last point was that the Department should be careful not to offer autonomy to the shipyards in terms of independently deciding safety performance, trading.

Mr. SCHANK. Yes, trade-offs, cost benefits.

Senator TALENT. Give me an example of what you mean by that. What kind of thing in your judgment would be unwise?

Mr. SCHANK. One of the things we learned from our work with the *Astute* program in the United Kingdom was that MOD was at a point where they tried to shift a lot of responsibility and risk to the private sector. This included design authority for the submarine and ability to make technical decisions. This did not work as well as they thought it would. The industrial base was not prepared to accept the responsibility and risk. Even if they were, there is some element of risk, safety, and performance that have to reside with the Navy and with the Government, that we can't transfer to a shipbuilder. I think safety is the primary example of that. It is the Navy, it is the Government, that is ultimately responsible for the safety of our sailors and crew members.

Senator TALENT. I'm not suggesting that I would want seriously to do this but, I am interested in why this was one of the four points that you chose to summarize. Is it just because you think the decisions that the private sector would make would be inappropriately weighted toward cost reduction or is there something about those decisions where the Government just optimizes better than the private sector?

Mr. SCHANK. I think the Government optimizes better. I think the Government has a broader view. I think the Government metrics for decisionmaking are slightly different than industry's; as you mentioned, profit drives many of industry's decisions.

I think the point is important, and why I made the point is that we see what happened in the United Kingdom MOD, we see that beginning to happen in our Naval Sea Systems Command; loss of resources, transfer of resources out of the command, and belt tightening. We think that had catastrophic consequences in the MOD. We think it can within the Navy. You need sufficient talent and sufficient skills to be able to be an informed buyer of a product. The Navy needs those skills to be an informed buyer of complex warships. They need the technical authority to be able to make decisions on safety, performance, and trade-offs. Our concern is that those kind of skills are beginning to be lost within the Navy and within the command structure.

Senator TALENT. I remember some of my old friends on the House side thought we could save a lot of money by reducing the acquisition force within the Department. This sounds to me like a note of caution against doing that too much.

Mr. SCHANK. Yes, sir. Yes, sir, it is.

Senator TALENT. Now, you said we need to have reduced demand peaks and valleys. We are all in agreement with that, and that we need to do this simultaneously across all ship types and shipyards and basically what that means is we need a decades long plan.

Mr. SCHANK. Yes, sir.

Senator TALENT. That takes into account all of these factors in order to optimize production, so that they meet requirements. Do you think that the plan, so far as you understand it, that the Navy is proposing is such a plan? Would you be prepared to say what deficiencies you think might be in it or have you not familiarized yourself enough?

Mr. SCHANK. I am well aware of the plan. I think it is a good start. I think it is a necessary start. I think what is needed, and I am sure the Navy would agree, and I have heard it, is commitment to that plan, so that it is not just something on paper but it is something the shipyards can believe in and know will unfold. Yes, there will be changes. We can't predict the future perfectly. But those changes should be minimized as much as possible. The other part of it that I think is lacking that, again may not be possible at this point, looking out 30 years, is it does not tell the shipbuilders. It tells the shipbuilders how many and what type of ships we will build. For some of the shipbuilders that is fine. But it doesn't tell the shipbuilders where those ships will be built or where all their ships will be built. Again it may be at this point too early to do that but I think that is an issue where decisions need to be made soon or at least in the short-term or at least the next decade. We have talked about competition a lot. I bring that up in my talk here but it is not clear to me that we actually have competition. Competition for work share. I think we rightfully need to protect our industrial base assets and to do that we have to make sure there is enough work within our shipyards. That suggests that there has to be some level of allocation. When you are not building very many ships, you may end up allocating all the ships that are in your shipbuilding program and have nothing left to compete. If that is the way the future will be, then we should recognize that and we should tell the shipbuilders that.

Senator TALENT. That we are going to allocate rather than compete. You mentioned you can compete not just for work share but profit levels and award fees. Would you explain that a little bit more and give me some examples of what you mean.

Mr. SCHANK. I think the DDG–51 program is an example where they evolved to a point where they allocated the ships to the two shipyards, but the profit levels were determined based on the performance of the shipyards. The shipyards that perform better would make a higher profit than the shipyards that did not perform better.

Award fees from my perspective have not achieved the desired goal. I think they may need to be tied to some level of proficiency and productivity rather than to milestones being accomplished. It is not what you accomplish; it is how well you accomplish it. I think that is what we are looking for. We tend to write contracts and make decisions on the shipyard basis, but yet our six shipyards are owned by two major companies. Possibly, and we have not studied this, this is just a thought. Possibly, we should be contracting and thinking about negotiating at the corporate level and bundling contracts together. Awarding incentives or profits on that bundle of contracts on how well the corporation does compared to the other corporation, rather than on how well an individual shipyard performs on an individual ship.

Senator TALENT. Now, in doing that of course we have to recognize the reality that Senators represent shipyards rather than corporations.

Mr. SCHANK. Yes.

Senator TALENT. I can say that since I don't have any shipyards in Missouri. You may be wondering why a Senator from Missouri

is chairing the Seapower Subcommittee. I don't have in that sense a parochial stake in this but others do. Of course, they believe very passionately in the effectiveness of their workforces. So, if we were to do that I think we would have to work that out carefully to make sure that Senators felt that their workforces and their shipyards are being allocated effectively in that context.

Mr. Bloor, I have not forgotten you. I just was following up on what Mr. Schank said. Do you have any comments on anything he said to this point? Any you particularly agree with or perhaps disagree with?

Mr. BLOOR. Not at the moment, no.

Senator TALENT. Okay. I was interested in your assessment and pleased that during the 5-year period between the surveys of the U.S. industrial base, you measured notable improvement and performance in most areas anyway. You highlighted that that improvement might be attributed to the capital investments made by the shipyards. Now, what interested me about that was that was during the period when the shipyards were operating with declining workloads. There probably has not been a greater period of instability and uncertainty in the industry than the period where you measure improvement. So, can you tell us what the nature of the capital improvements were that the shipyards made during the period? Will they offer us insights into the types of incentives that motivated that or what caused that in the face of the decline in workload?

Mr. BLOOR. Yes, the types of things that we saw where major investments and things like new cranage, panel lines, steel building facilities in general, some investments in construction sites, berths and so on and so forth. There has also been some investment in some of the softer areas in things like design tools and so on. We speculated for some time, during the report, about why this improvement had occurred. We didn't really reach a conclusion. However, we did represent our speculation in the document. That was that we felt perhaps it was a time of industry consolidations as the shipyards were being consolidated into two corporations. We thought the pressure being brought to bear by the individual corporations was probably driving performance to some extent. We also thought that the fall-off in naval demand and new construction demand had been anticipated for some time and we thought that may be some pressure toward driving performance improvement. We also believe it was a genuine desire almost across the industry to actually improve. It really impressed us to go around some shipyards and see what they had done. It was impressive.

Senator TALENT. So, when you tell us, both in hearings and privately, that they are eager to—if we can get them stable funding and stop changing the requirements all the time—that they really are eager to perform better, that would be consistent with what you found in your study.

Mr. BLOOR. Yes, I think so.

Senator TALENT. I am interested, if you would explain a little bit more what you meant by customer factor. I think I understand it but I want to understand it more precisely. You say it is estimated to be between 10 and 15 percent for most U.S. naval vessel types.

Are you talking about productivity or cost increases? Just explain a little bit more preciously if you would.

Mr. BLOOR. The customer factor came about because we were trying to compare the performance of naval builders to commercial builders, for which we have a lot of data. But in doing that, it is important to understand exactly what work content the naval builders have to execute. Most of the measures that we have are based on a commercial contract where the shipyard is expected to do certain things as part of a commercial contract. When a shipyard builds for a government, inevitably, the shipyard has to do things over and above the construction of the vessel, which are not the norm in commercial shipbuilding or at least they might have to do more of something. So, we tried to get an understanding of how much additional work that was. It relates to all sorts of things. There is a list of them in the report. The things that spring to mind are things like for prime contracts, flow-down, and additional management time in reporting and attending meetings—things like the managements have changed orders. There is a whole raft of things, which do actually affect the cost.

It was interesting because that represents an opportunity. We are not saying it is good or bad. We are saying this is about how much work seems to be tied up in these types of things. But it does represent an opportunity to make some savings. Perhaps some of the things are outside the control of the Navy but some may be within the control of the Navy. It is just we are recommending it should be investigated.

Senator TALENT. So I'm glad I asked the follow-up because when your statement says, "the estimates took vessel complexity in the additional work the shipyarders required to do as a consequence of working on the government contracts." I thought that meant more complex requirements or perhaps requirement changes. But it sounds to me now like you are talking about what a layperson might say is paperwork or the need to satisfy FAR part regulations or bureaucratic demands, which again may be justified but aren't directly related to building a more capable vessel, necessarily.

Mr. BLOOR. Yes, the calculations or the estimate took both of those things into account. So, it was the additional paperwork and so on. But also the additional complexity of the vessel and the work content associated with that.

Senator TALENT. Would you care to give me any estimate of what percentage of costs might be attributable to the need to comply with acquisition regulations that don't exist in a commercial context?

Mr. BLOOR. I don't know whether we could—well, I think as a whole we thought as we said in the report between 10 and 15 percent.

Senator TALENT. That might include some of just the more complex requirements, though.

Mr. BLOOR. The complex requirements of building the actual vessel itself?

Senator TALENT. I am sorry. I should have let you answer. I understood you to say that the 10 to 15 percent was both the need to satisfy regulatory demands but also attributable to the fact that

the naval vessels have higher requirements than commercial vessels.

Mr. BLOOR. Oh, no, it was just the former.

Senator TALENT. So, it is your sense that 10 to 15 percent of the cost of the naval vessels attributable to the need to comply with the various acquisition regulations and go to more meetings and more oversight and that sort of thing.

Mr. BLOOR. Yes, but actually not the whole cost of the vessel but only the man-hours spent by the shipyard.

Senator TALENT. Okay. So that percentage of the labor cost or the man-hours on that?

Mr. BLOOR. Yes, and I should say that this is an estimate.

Senator TALENT. Sure. I think what Mr. Schank said cautions against reacting to that by going out and taking a meat cleaver to the acquisition, you know personnel or functions. But it does suggest that perhaps if we could get this body here to bless it, that it might be good to do some kind of a government-industry task force to ask themselves what we really need to have and don't need to have in terms of some of these regulations.

Mr. SCHANK. Right.

Senator TALENT. My experience has been, though, that we will need to get an understanding here on this side of the table that this process is going on and a buy-in in Congress because most of those regulations are there because Congress put them there for one reason or another. So, we would need to get a buy-in over here, I think.

Mr. SCHANK. One of the things, after doing research in naval shipbuilding here in the United States for a number of years, we had the opportunity to go to commercial shipbuilders in Europe and Asia. One of the things that struck us was how lean their overhead staffs were. Where in U.S. shipyards you would see clearly dozens, if not hundreds, of lawyers, accountants, just basically overhead-related people, you would see a mere handful in the commercial yards. Now again, part of it is due to the reporting requirements. We have requirements we lay onto shipbuilders to periodically report cost. That doesn't exist in the commercial world. They sign a contract and the deliverable is the ship. But it struck us as that part of the customer cost that Damien is talking about was very obvious, when you look at commercial shipbuilders versus naval shipbuilders. It is not just the United States; it is in other countries too. The United States and other European countries like the United Kingdom and France, where it was the same type of customer factor.

Senator TALENT. Now there was quite an overhead in those countries as well.

Mr. SCHANK. Yes.

Senator TALENT. When you are building a naval vessel, it is probably more important in terms of the consequences to get it right than it is if you build a commercial vessel. Still, however it might be an area where we can work. I will talk to the staff afterwards, but again we are going to have to go into it with our eyes open over here. Because the Pentagon has had experience with trying to propose these kinds of reforms when Congress wasn't anticipating it and I don't think the result was such that people want

to repeat the experience. So, we would have to work on that over here.

Mr. Bloor, you mentioned that some of the things that the Government could do to improve productivity would be improve shipyard incentives. What kind of incentives are you talking about? Could you be a little more specific with that?

Mr. BLOOR. This is a huge area.

Senator TALENT. I will give you 2 minutes. How is that?

Mr. BLOOR. Okay.

Senator TALENT. No, take as much time as you need.

Mr. BLOOR. I think in a nutshell we think the incentives should be structured in a way that rewards shipyards for performing better than spending more man-hours. I think that is it in a nutshell.

Senator TALENT. So, that seems to agree with what Mr. Schank is saying, that we need some way of perhaps a more subjective evaluation or at least a more complex evaluation of what better performance is rather than taking one or two indexes and measuring it that way. Is that fair?

Mr. BLOOR. That might be part of it.

Senator TALENT. Did you agree with Mr. Schank's belief that protecting the design industrial base is a key? Would you agree with that?

Mr. BLOOR. I think that it is very important to maintain a good design industrial base and also to develop it, to be able to allow construction to be done more efficiently.

Senator TALENT. My understanding is that our warship construction has been noted for being more labor intensive compared to commercial shipbuilding practices with a lot of reliance in in-house capabilities. Would you agree with that? Would you compare that with practices in foreign shipyards? Could you draw some conclusions regarding the merits of the two approaches? Are we more labor intensive here this is for both of you—doing more in-house compared to what foreign shipyards do? Would you say that is a good thing, bad thing, or a neutral thing, if you agree with it?

Mr. BLOOR. I think that it is interesting; it is a trend in naval shipbuilding worldwide. The naval shipbuilders tend to do more work in-house than commercial shipbuilders. In recent years, commercial shipbuilders have been subcontracting a great deal of work to lower cost areas. So for example, some European yards contract to Eastern European yards. Yards in South Korea contract to China and things like that. We don't think that it is a bad thing that the naval shipyards do things in-house. However, we do think they should have sufficient volume to justify carrying out the work with a reasonable level of technology and therefore achieving reasonable levels of performance to justify doing the work in-house. If they can't, then perhaps they should consider subcontracting more. In our report, we did talk about considering some regional centers for consolidating the work in one area, which would justify higher levels of technology and production. So, for example, one might have a pipe shop in one area that would service all shipyards, it would be very high technology.

Senator TALENT. You want to comment, Mr. Schank?

Mr. SCHANK. I would agree with Damien. Let me say a couple of things here. We did a fairly extensive study of outsourcing prac-

tices in the United States, United Kingdom, European Union, and Asian shipyards. We found that in commercial ships there is a fair amount of outsourcing or subcontracting, especially in the European Union. We don't see that as much in the Asian shipyards. They will hire temporary people but we make a distinction between hiring temporaries to meet short-term peaks versus turning a complete function like painting or piping over to another organization. We see that in Europe. We do not see it so much in Asia, certainly not in the United States or in the United Kingdom. But even in Asia and the European Union many shipbuilders that build military and commercial ships—and there aren't a lot that have been successful in doing both—will separate within their shipyard (physically separate) the building of the ships and typically the workforce. Often for security reasons they will only have permanent employees on the naval ships versus part-time employees or subcontractors. Whether that is a good or bad thing, I am not prepared to judge. It is just an observation. Could we do more subcontracting? Yes, we could. Should we? We should to help mitigate the peaks. One way to mitigate peaks is to bring in temporary help. We tend not to do that. Now, maybe because of our labor unions, it may restrict some of that.

The other reason that I think is important in European shipbuilders and Damien can certainly comment on this, is it is often countries' labor practices that force them in particular directions. When we were visiting and talking with Spanish shipbuilders, again Spain is a very Catholic country, the gentleman I was talking with said, it is cheaper and easier for him to divorce his wife than it is to lay off one of his employees. Because of the national labor policies, it is almost like a university tenure system. Therefore, what many of the shipyards have migrated to is rather than having permanent employees and the problem of trying to adjust a workforce in light of peaks and valleys is that they use subcontractors or temporary hires.

So, from my point of view you need to not only look at the practice but the reasons for the practice.

Senator TALENT. Okay, you mentioned that there aren't a lot of shipyards that are successful at doing both naval and commercial shipbuilding. Our shipyards have focused on the military shipbuilding.

Mr. SCHANK. Yes, sir.

Senator TALENT. Do you think it is feasible for them to develop a competitive commercial capability? If so, what do you think they need to do?

Mr. SCHANK. My personal view—and we have not studied this, but my personal view—we studied it for the United Kingdom and our recommendation was don't count on it. I don't think a country like the United Kingdom or the United States or even European Union countries can compete with the Asian countries in terms of their productivity and their labor rates. The labor rates in China are one tenth of what they are here. So, no, I don't see the United States being competitive in the commercial marketplace unless it is for specialized kinds of ships.

Senator TALENT. Would you agree, Mr. Bloor?

Mr. BLOOR. To some extent. I think in parts of the European Union at the moment there are good order books in shipbuilding and shipyards are full. Also, ship prices are very high. To be successful in commercial shipbuilding a shipyard needs to be configured differently then it should be to be successful in naval vessel building. That is actually one reason that shipyards tend to segregate naval shipbuilding and commercial shipbuilding. It is not just about security and those types of things. It is about culture and structure, and also to some extent quality standards. So, it is interesting that in some vessels in which the United States has good experience they can offer pretty good prices and are competitive, almost I think. But, in the vessels where they don't have so much experience and have not been able to get down the learning curve and all of those things, then they are less likely to be internationally competitive. As far as the large yards are concerned, I think it is quite a challenge to build commercial vessels in an international market and naval vessels as well.

Senator TALENT. Let me ask one more question and then I will let you gentleman go. I know you have focused on the first-tier shipyards. Do you have any opinion about the health of the vendor base? Do you know the second-tier suppliers for American shipyards?

Mr. SCHANK. We have looked in that area in a number of our studies for the United States Navy. Let me segregate it into two parts. One that supports the nuclear propulsion industrial base and one for conventional ships. The nuclear propulsion industrial base is basically down to sole-source providers. Now, with the new carrier and with one submarine a year they can remain viable. The refueling/complex overhauls to the carriers help out the vendors. New cores go in, for example. A lot of the valves and so forth get replaced. On the conventional side, we are always surprised. There are always exceptions. There are always those companies that are hanging by their thumbnails. But we have always been surprised at how robust the second-tier vendor base is. What we find, and we conduct surveys very often, is that the Navy is often typically a minor customer in their product lines. Now, again there are exceptions. So, I don't want to paint the whole vendor base with the same brush. But we think that there is more robustness in that segment than we often give it credit for.

Senator TALENT. Do you have a comment, Mr. Bloor?

Mr. BLOOR. Yes, we haven't really looked at the vendor base specifically except to say that as far as I am aware, it is actually reducing and I do know that quite a few shipyards are having reduced choice in terms of where they can buy components. That is especially the case the more prescriptive contracts are so owners actually nominate certain suppliers—that is often the case—in naval work. Then it becomes more difficult to get good prices and have more choice. Of course, price goes up. A further restriction in the United States, of course is the sort of buy America type policies that often surround these contracts, which also further limit the choice and therefore the price.

Senator TALENT. I thank you gentlemen for your testimony. Mr. Bloor, thank you for coming such a long way. Mr. Schank, thank you for your comments.

Mr. SCHANK. Much shorter for me, sir.
Senator TALENT. Yes, sir. The hearing is adjourned.

[On May 18, 2006, Mr. Schank requested that the following information be included in the record.]

Recommendations for further study:

Major Shipyards

Over the past decade, several assessments of individual sectors of the ship industrial base have been performed, but a comprehensive analysis of all the sectors, private and public, has not been conducted.[1] Before decisions can be made regarding the shipbuilding industrial base, an estimate the future demands on the warship industrial base and the capabilities of the industrial base to meet those demands needs to be determined. The analysis should identify potential problems that may exist in the expansion/contraction of the industrial base and propose and evaluate solutions to those problems. The analysis should examine the requirements and capabilities of not only the public and private shipyards but also the vendor base that supports new warship construction and the existing fleet. Options that match future workloads to industrial base capabilities should explore the integration of public and private capabilities.

While much has been said and written in recent years about excess shipyard production capacity, much of this debate has focused on reducing the number of private shipyards. Yet, each shipyard is optimized to build a certain type and size ship that is not fungible among shipyards. A study is needed to examine the optimum size of the remaining private shipyard to satisfy anticipated demand.

Mid-Tier Shipyards

As the Navy rebalances its fleet with smaller, somewhat less complex and less expensive ships such as the LCS, these programs will shift significant demand from the larger shipyards that have traditionally built Navy ships to mid-tier shipyards. This sudden and growing reliance on mid-tier shipyards raises concerns about their ability to design, construct, integrate warfighting systems, test and deliver combatants on time and within budget. An analysis in needed to explore current and expected future demands at the mid-tier shipyards for Navy ships, U.S. Coast Guard vessels, commercial work, and foreign military sales that will identify excesses and constraints. Solutions should be proposed and

[1] An example of such an industry wide analysis is *The United Kingdom's Naval Shipbuilding Industrial Base: The Next Fifteen Years*, MG-294-MOD, RAND, 2005

options evaluated for the effective use of all industrial base assets to attain future military shipbuilding objectives.

Vendors

A major element of the overall shipbuilding industrial base is the set of vendors that supply components and material to the shipyards. Thousands of firms provide components of some technical complexity or that are unique to construction of U.S. Navy ships. While the majority of those products represent variants of products used elsewhere and do not require highly specialized industrial processes, some are distinctive and highly specialized and provided by firms that may have no other product lines. An analysis should be performed to quantify the number of products or firms that would be most effected by a prolonged cessation or shift to a higher production rate, and develop strategies to cope with either

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JAMES M. TALENT

SUBMARINE BUILD RATE

1. Senator TALENT. Ms. Stiller and Admiral Edwards, the Navy's shipbuilding program results in the attack submarine force dropping below the requirement for 48 boats, in large part due to the inability to replace the retiring 688 class at the same rate that they were constructed. The Chief of Naval Operations (CNO) has expressed his willingness to increase to a two-boat per year build rate when he can get the unit cost down to $2 billion.

I believe we would all agree with the CNO's focus on affordability. There are, of course, added, pressing concerns with minimizing future shortfalls to submarine warfighting requirements, concerns with viability of the submarine industrial base, and pragmatic constraints which the Navy is dealing with regarding the top-line. What is the Navy's roadmap—what are the extraordinary measures that the Navy and industry are undertaking to satisfy the somewhat competing, yet critical objectives of warfighting requirements, affordability, industrial base, and budget constraints?

Ms. STILLER and Admiral EDWARDS. Based on the requirements reflected in the Fiscal Year 2006 Quadrennial Defense Review (QDR), the Navy developed the 2007 Annual Long Range Plan for Construction of Naval Vessels. This plan balanced several factors, including naval force operational capability, affordability, and the ability of the shipbuilding industrial base to execute the plan.

With respect to *Virginia* class submarines, we are committed to increasing the build rate at the earliest opportunity consistent with affordability. However, we need to ensure in recapitalizing this asset, we do not put ourselves in a position where we are once again faced with block obsolescence, which is the problem we are now facing with the *Los Angeles* class recapitalization. Today's challenge is to rationalize *Virginia* class investment in a way that provides an affordable ramp for its future replacement. We are pacing submarine procurements as we go forward so we are positioned in the future to address recapitalization requirements and not revisit our current affordability challenge.

The requirement for 48 attack-submarines is focused on pacing the threat through fiscal year 2020 and the plan sustains the combined *Los Angeles* and *Virginia* Class submarine inventories at 48 through 2020. Only beyond 2020 do we drop below 48 submarines. When this drop occurs, there are several options the Navy can employ to mitigate the impact of the post–2020 inventory shortfall. The first option to consider is the decision to accelerate the *Virginia* Class procurement program and increase the build-rate above 2 per year for some period to avoid the "bathtub" completely. While this option would solve the problem, building this additional capacity earlier is an expensive option that addresses what is essentially a temporary problem and reintroduces the probability of block obsolescence in the future. This option would also have severe negative impacts on other sectors of the shipbuilding industrial base.

Alternatively, there are management measures the Navy could institute in the post–2020 submarine force to ensure adequate combat capacity in the theater of interest. The Navy will likely take additional risk in non-warfighting missions in lower risk security environments (e.g., curtail ISR missions not associated with MCO constructs) to ensure a sufficient number of submarines are available in the theater that drives our requirement to 48 submarines. While this creates increased risk in those areas not fully supported by submarine patrols, it is risk consistent with the level of threat anticipated in these lower risk security environments. In addition, the Navy has begun shifting submarine structure towards the Pacific theater. This reduces response time and improves the relative availability of submarines in that theater. Ultimately, rebalancing the force between the east and west coasts of the United States provides the Navy with a more appropriately positioned force ready to respond to anticipated threats should they come to fruition.

On balance, we have an optimum investment of resources over the long-term to preserve sufficient capability and capacity while recapitalizing other mission capabilities fundamental to operational success; other requirements such as carrier and surface combatant presence missions, CONPLAN 7500 execution, and expeditionary strike force operations. Trading anyone of these capabilities against submarines could result in the loss of a significant joint force enabler such as carrier presence, seabasing, or sea strike. Each of these joint enablers represents equally compelling demands for Navy resources—our current plan, as reflected in the President's budget, represents the best overall balance of these competing requirements and is therefore the most efficient allocation of available resources.

2. Senator TALENT. Ms. Stiller and Admiral Edwards, when is the earliest that you believe we will be able to reliably contract for two *Virginia* class submarines per year at $2 billion each, and what measures are necessary to achieve this level of cost performance?

Ms. STILLER and Admiral EDWARDS. The option to accelerate the procurement of two SSNs per year to 2009 instead of 2012 was considered in the Navy's shipbuilding plan. This option, however, was rejected since it would add three submarines at a cost of $7 to $8 billion across the Future Years Defense Program (FYDP) at the expense of other vital naval programs.

The Navy has also determined that by procuring two *Virginia* class submarines per year in fiscal year 2012 as part of a Multi-Year Procurement contract with Economic Order Quantity, the Navy will realize a cost savings equal to about half of what is needed to meet the Department's goal of $2 billion (in fiscal year 2005 dollars) per hull.

The Navy has identified five areas that must be addressed to achieve the remaining cost savings in order to meet the fiscal year 2012 threshold of $2 billion (in fiscal year 2005 dollars). First, the General Dynamics Electric Boat and Northrop Grumman Newport News team can redistribute work to the most efficient operations to maximize savings—a modification that is allowed under the current teaming arrangement. Second, the Navy must refrain from making requirements changes to the *Virginia* class design. Requirement creep can add significantly to the cost of a submarine. Third, the shipbuilders must meet the contractual requirements and apply lessons learned to the submarines now under construction. Fourth, the Navy and the shipbuilders must continue investing in producibility improvements through the capital expenditure funds set aside in the current Multi-Year Procurement contract. Fifth, the Navy needs to invest in design changes that will make the submarines easier, and therefore less costly, to build. These actions in concert with a continued, stable two per year build profile will help the Navy achieve the $2 billion (in fiscal year 2005 dollars)/boat target planned for in fiscal year 2012.

LEASING FOREIGN-BUILT SHIPS

3. Senator TALENT. Secretary Etter and Ms. Stiller, the Department executes long-term leases for foreign-built ships in support of military sealift requirements. These renewable, long-term leases, slightly less than 5 years in duration, potentially detract from U.S. shipyard construction of commercial-type ships for military application. Could you please place in context the extent to which the Navy, and its components, rely upon leasing foreign-built ships to meet its requirements?

Dr. ETTER and Ms. STILLER. The Military Sealift Command (MSC) charters ships from the commercial market to meet the requirements of DOD components and respond to changes in the operational environment. Very few commercial ships with high military utility have been constructed in U.S. shipyards in the past 20 years. Consequently, when MSC has a requirement to charter a vessel, nearly all of the

offers are for foreign-built ships. In cases where the need is immediate or subject to change, due to the operational environment or other factors, a commercial charter is the only practical way to obtain the capability rather than a new construction program which can take up to 5 years for delivery of the first vessel. Current policy requires the use of U.S. flagged vessels before foreign flagged vessels, regardless of where they are built. U.S. flagged vessels may be built either in the United States or foreign shipyards but must meet, at a minimum, documentation requirements under 46 U.S.C. to qualify for U.S. flagging.

MSC presently has 23 U.S. flagged vessels, but no foreign flagged vessels under charter to meet a variety of DOD requirements. Although all 23 vessels are operated by U.S. companies, only 7 of these ships were constructed in the United States. Additionally, all of these ships are crewed by U.S. citizen mariners and any reflagging work to bring the ships up to USCG standards was completed in U.S. shipyards.

In those cases where we have long-term, consistent requirements that are best satisfied by the construction of new purpose-built vessels, then we have established and funded programs such as the Large Medium Speed Roll-on/Roll-off ships and the Dry Cargo/Ammunition Ships—T-AKE class, to meet these requirements. We are also moving ahead with the acquisition of the Joint High Speed Vessel as a replacement for the capability currently fulfilled by the Westpac Express Charter.

4. Senator TALENT. Secretary Etter and Ms. Stiller, what is the long-term plan regarding renewal of leases for these ships, and what would be the impact if the option to renew these leases were limited to 2-year duration?

Dr. ETTER and Ms. STILLER. The Navy, with DOD, continuously evaluates the appropriate mix of government-owned and leased ships to meet U.S. contingency requirements, as well as peacetime classified or special moves (Patriot missiles, M–42 refueling containers, etc.). We are undertaking further excursions from the MCS that will evaluate the lift requirements and available lift capabilities to provide greater definition for out-year requirements. In the case where we have long-term, consistent requirements that are best satisfied by the construction of new purpose-built vessels, we will continue to establish and fund programs such as Joint High Speed Vessel as a replacement for the capability currently fulfilled by the Westpac Express Charter.

With respect to limiting leasing periods to 2 years, the Navy opposes this legislation as it would have a severe negative impact on the ability of MSC to carry out its mission of providing sealift support for a wide variety of DOD activities. If enacted, the legislation would result in either mission degradation or an exponential increase in cost to the taxpayer. Generally, savings are achieved by longer charter contracts. Further, to promote a viable U.S. merchant marine and support a vigorous and competitive domestic ship construction and conversion industry longer leases are essential as an incentive for commercial carriers to invest in either U.S. built new construction or reflagging of foreign vessels.

5. Senator TALENT. Secretary Etter and Ms. Stiller, how would changes to this practice affect long-term plans for recapitalizing these support ships?

Dr. ETTER and Ms. STILLER. MSC charters ships from the commercial market to meet the requirements of DOD components and respond to changes in the operational environment. In reality, very few commercial ships with high military utility have been constructed in U.S. shipyards in the past 20 years. Consequently, when MSC has a requirement to charter a vessel, nearly all of the offers are for foreign-built ships. In cases where the need is immediate or subject to change, due to the operational environment or other factors, a commercial charter is the only practical way to obtain the capability rather than a new construction program which can take up to 5 years for delivery of the first vessel.

Changing the current rules regarding leasing would have a severe negative impact on the ability of MSC to carry out its mission of providing sealift support for a wide variety of DOD activities. Any further restriction would result in either mission degradation or an exponential increase in cost to the taxpayer. Additionally, legislation further limiting the period of leases may be counterproductive to promoting a viable U.S. merchant marine and supporting a vigorous and competitive domestic ship construction and repair industry. Longer leases are essential to incentivize commercial carriers to invest in either U.S. built new construction or reflagging of foreign vessels.

SEABASING

6. Senator TALENT. Admiral Edwards, the Navy's seabase concept takes shape in the fiscal years 2007–2011 FYDP, with 12 Maritime Prepositioning Force (Future), (MPF(F)) ships plus sea-shore connectors included in the future force structure plan. Total cost for this capability is approximately $15 billion. In the course of the past year, the concepts for MPF(F) ships in support of seabasing have changed significantly; emerging in this FYDP as one of the centerpieces of the future force. How do you rank this capability amongst competing priorities; recognizing that the increasingly significant investment in the seabase comes to some extent at the expense of allowing gaps to form in submarine, surface combatant, and expeditionary strike capabilities?

Admiral EDWARDS. The future Navy will remain seabased, with global speed and persistence provided by forward deployed forces, supplemented by rapidly deployable forces through the Fleet Response Plan (FRP). The MPF(F) Squadron is only one part of the transformational seabasing capability as defined in the Seabasing Joint Integration Concept (JIC), equally important as the aircraft carriers, submarines, amphibious, surface combatants or logistics ships required to realize this transformational capability and shape our Navy to meet current and emerging security responsibilities. The CNO has developed a shipbuilding plan that balances several factors to include operational requirements, affordability, and the ability of the industrial base to execute the plan. The force structure as defined in the "Report to Congress on Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2007" was developed using a capability-based approach and anticipated threats for the fiscal year 2020 time period. This balanced approach builds the Navy the Nation needs—a Navy that is both affordable and meets the future national security requirements outlined in QDR 06 with acceptable risk. Force structure requirements were developed and validated through detailed joint campaign and mission level analysis, optimized through innovative sourcing initiatives (FRP, Sea Swap, forward posturing) that increase platform operational availability, balanced with shipbuilding industrial base requirements.

7. Senator TALENT. Admiral Edwards, General Schwartz testified that his priority is to ensure that the seabase ships do not become single mission ships with limited utility to support the Transportation Command's (TRANSCOM) requirements. How will you address the TRANSCOM's requirements in your process for defining the MPF(F) ship capabilities?

Admiral EDWARDS. DOD's sealift assets support TRANSCOM's time-phased transportation requirements to move forces in support of current/future war plans/fights. These assets can be divided into three broad categories: (1) preposition, (2) surge sealift, and (3) follow-on shipping.

As a part of a seabase, the MPF(F) squadron has primary missions to preposition the 2015 Marine Expeditionary Brigade and be able to conduct sustained joint operations from the sea. As a prepositioned and combatant commander (COCOM) asset, MPF(F) fully supports TRANSCOM mobility requirements, closing a fully deployable and combat ready brigade to a theater within 10–14 days without the need for a seaport or airport in the joint operating area and independent of host nation support. This reduces TRANSCOM's surge sea and airlift requirements in support of early delivery of joint forces to COCOMs. The primary sealift asset in the MPF(F), the MPF(F) LMSR variant, is similar to LMSRs in Army prepo or those designated as surge sealift, but is specialized for the needs of conducting seabased operations (with added magazines, troop berthing, maintenance shops, etc). As with all assets used in the course of a campaign, operational requirements will determine individual asset availability for strategic sealift and the COCOM will prioritize requirements and make those ships available to TRANSCOM for the common user pool just as is done with the MPS ships today.

8. Senator TALENT. Secretary Etter, the seabase is essentially a high-order expeditionary "system of systems." How is the Department structured to manage the development and procurement of the full range of end-to-end seabase capabilities to ensure they are fully integrated and also support joint operations?

Dr. ETTER. The Department is structured in a manner to oversee all ship configuration matters ranging from the ship's initial concept to decommissioning. This allows us to adjudicate capabilities/requirements in each program to identify excess capabilities in our programs and halt requirements creep while keeping the entire enterprise focused on reducing the unit procurement costs. This structure allows us to balance the demands of fleet capability, shipbuilding industrial base, and cost.

The Department has also instituted policies and mechanisms, across all appropriations, to allow for tradeoffs to occur between cost and requirements within our shipbuilding programs to include systems and subsystems. We have imposed a discipline that limits changes during the critical phases of the major shipbuilding programs to those related to safety, contractual defects, unavailable contractor furnished equipment, testing and trails deficiencies and statutory/regulatory changes.

These actions have allowed us to control the scope and timing of changes in a planned manner. The Navy is also engaged with the shipbuilding industry and sister Services to leverage interrelated acquisition programs so we can reduce our research and development costs and gain economies in production. The Navy, as designated lead Service for the seabasing JIC, as it precedes through the Joint Staff directed Capabilities Based Assessment (CBA), is continually ensuring that seabasing is looked at as a joint concept and that all Doctrine, Organizational, Training, Material, Leadership, Personnel and Facilities (DOTMLPF) solution sets that are identified to address capability gaps, as determined by the Seabasing Functional Needs Analysis (FNA), address joint requirements and not Service specific desires.

QUESTIONS SUBMITTED BY SENATOR JOSEPH I. LIEBERMAN

NEW LONDON CENTER OF EXCELLENCE

9. Senator LIEBERMAN. Admiral Edwards and Admiral Locklear, I think we should begin to transition New London from the world's best submarine center of excellence to the world's best undersea warfare center of excellence. Concentrating the east coast submarine force there, and basing the Littoral Combat Ship (LCS) antisubmarine warfare and countermine modules there would be a good start. Devoting more resources to new design at Electric Boat would further strengthen the remarkable synergy among New London, Electric Boat, and the world's leading undersea expertise in the region, and would go a long way in preserving the industrial base. What is your reaction to expanding New London's mission to a center of excellence for undersea warfare and how can we move toward this goal?

Admiral EDWARDS and Admiral LOCKLEAR. We agree that a historical synergy in undersea warfare exists because of the proximity of the Submarine Base New London, Electric Boat Shipyard, and distinguished educational institutions in Southeastern New England. This synergy will continue to be a vital component of our national strategy in undersea warfare dominance.

However, the Littoral Combat Ships and their mission packages must be able to augment U.S. strike groups wherever they may encounter threats to freedom of navigation, or to provide access to littoral regions that may be threatened by mines, submarines, or small boats. Logistic and fiscal reasons dictate that we collocate our mission packages with the ships and their crews, both in CONUS and overseas, to efficiently train sailors and deploy them rapidly to meet worldwide threats.

Naval Submarine Base New London, and the Naval Undersea Warfare Center in Newport, Rhode Island, and its research and development laboratories, share close ties between themselves and with the University of Rhode Island, the University of Connecticut, and other educational, research, and industrial partners in the New England region. We look forward to continuing those valued relationships to further develop undersea technologies and capabilities that may be incorporated into future mission module upgrades.

SUBMARINE FLEET SIZE

10. Senator LIEBERMAN. Admiral Edwards and Admiral Locklear, I understand that in 2005, the CNO directed a study of existing force structures. Based upon this assessment, 48 attack submarines presented an "acceptable risk" and also allowed an affordable plan for shipbuilding. In contrast, a 1999 force structure study suggested a submarine fleet between 55 and 62. At a subcommittee hearing of the House Armed Services Committee last week, Admiral Munns conceded that the decision to move to 48 submarines was budget driven, given that there are unexecuted missions due to the size of our submarine fleet. Admiral Munns also classified this risk as "moderate" rather than "low."

Why have we moved from a larger projected fleet that generates lower risk to a smaller fleet that allows moderate risk? Quite frankly, this movement does not make much sense to me, given that China has increased its submarine production, and certainly the world has become a more complicated, dangerous place since we entered the war on terrorism. Please explain how a reduction in the recommended

submarine force structure size could have occurred when it is clear that the demand for surveillance and reconnaissance missions has increased.

Admiral EDWARDS and Admiral LOCKLEAR. As mentioned, the Navy conducted a comprehensive assessment of warfighting requirements across all ship types in 2005, culminating in the submission of the Fiscal Year 2007 Long-Range Plan for the Construction of Naval Vessels. This capabilities-based force structure assessment determined the number of ships needed to source joint warfighting demands across the entire spectrum of operations—from steady state to surge levels of effort supporting conventional campaigns (MCOs), global war on terror/irregular warfare and Homeland defense. To assess the fleet as a whole, the battle force was segregated into ship types and analyzed independently. Then using campaign-level modeling and simulation of OSD-approved Defense Planning Scenarios through the 2020 timeframe and applying "what it takes to win" criteria to define an acceptable level of risk, the minimum warfighting demands for each ship-type was established under the most stressful sequence of operations. This analysis led to an attack submarine force structure recommendation of 48 SSNs.

From a warfighting capabilities perspective, SSNs are just a portion of the force required to ensure undersea and maritime dominance. The significant investments in other platforms (P–8A/MMA, MH–60R), system modernizations, off-board netted sensors, enhanced undersea FORCEnet, and continued research will ensure the joint force maintains its critical warfare advantage against all potential threats. The 2005 analysis indicates a combination of these capabilities is required for success. From a forward presence and intelligence collection perspective, sophisticated new-start platforms, such as Broad Area Maritime Surveillance (BAMS) and MMA, provide additional capability and capacity to perform a subset of ISR mission sets.

The Navy will continue to work over the next decade to identify solutions to mitigate projected submarine capacity risks. Potential options include shifting submarine homeports to areas that require the highest priority warfighting and forward presence demands, optimizing future scheduling criteria, and/or changing submarine operating tempo. The Navy also is transitioning to a procurement rate of two SSN–774 submarines per year in 2012, as described in the 30-year shipbuilding plan. This plan will help ensure sufficient submarine capacity exists to maintain maritime dominance, using a wide concept of operations that integrates the full spectrum of Navy capabilities, without sacrificing other critical Navy and joint capabilities.

SUBMARINE INDUSTRIAL BASE

11. Senator LIEBERMAN. Mr. Schank, I am very concerned that this country is in the process of losing a critical national asset in the form of our submarine design and engineer workforce. For the first time in almost 50 years, there is no new submarine design on the drawing board and current design programs are near completion. Without foresight to ensure that our future military requirements can be met, today's designers will not be there when we need them. For example, at Electric Boat in my home State of Connecticut, almost half of the engineers and designers may face termination by 2008. At the Senate Armed Services Committee hearing on the Navy's budget earlier in March, Secretary Winter remarked that losing the submarine industrial base is an issue of "great concern" to him. Our undersea superiority depends upon the maintenance of this workforce. What can you do and how can we stop the erosion of this vital workforce?

Mr. SCHANK. We agree that nuclear submarine design skills are a critical national resource and an asset that must be sustained. Given there is no new submarine design effort currently underway or planned in the near future, our country faces the risk of losing that critical design capability. Recognizing this, the Navy has asked RAND to address the problem and to offer solutions. We are in the midst of that research effort and should have some findings and recommendations to the Navy by mid-summer. The critical questions include which skills will be required in the future, how many of those skill should be sustained until a new design program begins, and how to sustain those resources in a cost-effective manner. I should mention that Electric Boat and Newport News Shipbuilding have both been very helpful during the conduct of our analysis and has supplied various data and information that is supporting our research.

12. Senator LIEBERMAN. Mr. Schank, how can we preserve these critical skills?

Mr. SCHANK. Our study will identify and evaluate various ways to sustain the critical nuclear submarine design skills. In our work on basically the same issue for the United Kingdom's Ministry of Defence (documented in The United Kingdom's

Nuclear Submarine Industrial Base: Sustaining Design and Production Resources, RAND, MG–326/1–MOD), we listed several ways that nuclear submarine design skills might be maintained including: conducting spiral development of the current class, performing continuous conceptual designs with some potential prototypes, designing unmanned undersea vehicles, designing diesel submarines, development of new technologies, and collaborating with allies. Of these alternatives, we believe that spiral development of the *Virginia* class and collaboration on submarine design programs with our allies (in much the same way that Electric Boat assisted the U.K. with their Astute program) are the most viable options.

13. Senator LIEBERMAN. Mr. Schank, several reports indicate that the Chinese are building new submarines with increased capabilities, often capitalizing on Russian designs. Why is there no new submarine design on the drawing board?

Mr. SCHANK. This is an area RAND has not studied and I do not feel qualified to comment on.

14. Senator LIEBERMAN. Mr. Schank, how does this decision impact our ability to address future strategic threats to the United States?

Mr. SCHANK. Again, I do not mean to avoid your question, but RAND has not studied this issue and I cannot make any qualified assessment.

15. Senator LIEBERMAN. Mr. Schank, the submarine production industry is not confined to the northeast. The industry that supports submarine production includes 4,000 companies in 47 States. Since decreased submarine production affects the industrial base across the entire country, this is an issue of national importance. Has the Navy conducted any studies to examine the impact of reduced submarine production on the Nation's industrial base?

Mr. SCHANK. I am not aware of any studies of the health of the vendor base that supports submarine production; that question might be directed to the Navy. As part of our study on sustaining nuclear submarine design resources, we are considering the design resources of the nuclear and non-nuclear vendors that support the nuclear submarine industrial base. We have sent out survey forms to approximately 60 vendors identified by the shipbuilders as potentially having problems sustaining their design resources and have received a number of the completed survey forms. Our study will address sustaining the design resources of the vendors.

16. Senator LIEBERMAN. Mr. Schank, how long can the submarine industry sustain the low rate of production?

Mr. SCHANK. I believe the industrial base can survive at the low production rate but that there is a cost involved. That is, low production adds to the cost of building a submarine, or any product.

17. Senator LIEBERMAN. Mr. Schank, if the Navy decides that submarine production must be increased quickly due to escalated threats, do you believe the submarine industry will have the necessary skilled workforce to meet this demand?

Mr. SCHANK. Increasing production will require an increase in the workforce at Electric Boat and possibly at Newport News Shipbuilding (depending on the status of their carrier workload). Large increases in the workforce may be difficult since all shipbuilders are having a difficult time recruiting blue collar labor for their shipyards. Also, there have been difficulties in the past when production of *Los Angeles* class submarines increased. New workers have lower productivity compared to experienced workers and they also reduce the productivity of the experienced workforce through required training and mentoring. The end result is increased costs when production expands at too fast a rate. Given there is a desire to go to production rates of two submarines a year sometime in the future and the desire to reduce the cost of the *Virginia* class submarines, there is the need for a study to examine how to accomplish both those goals. For example, reducing the construction time of the submarines currently under contract could reduce costs but would also require an increase in some elements of the workforce. The increase in workforce could be managed in a cost effective way such that transition to two submarines a year would not bring about the loss in productivity that ordinarily results from rapid workforce expansion.

18. Senator LIEBERMAN. Mr. Schank, in order to increase our production, we must think about getting the submarine's cost down to $2 billion. I understand that for this to happen, we will need our submarine designers to make important cost-savings alterations. Only our designers have the critical skills to reduce the cost of the *Virginia* class. But if our designers are laid off from their jobs, how can we move

toward producing a more cost-efficient submarine? Please comment on this important problem, and how we can address it.

Mr. SCHANK. As mentioned above, one way to sustain nuclear submarine design resources is to perform spiral development of the *Virginia* class. I believe the Navy is already performing such studies aimed at reducing the production cost of the *Virginia* class.

RAND SUBMARINE DESIGN CAPABILITY STUDY

19. Senator LIEBERMAN. Mr. Schank, I understand that the Navy has commissioned RAND to study the potential impact of losing our Nation's submarine design capability. I also understand that the study will be completed this fall. Although I am sure the study will prove informative, I am concerned about its timing. By this fall, Electric Boat may have to lay off up to 900 designers. As an author of this forthcoming report, if we lose almost 1,000 designers this fall, how will the study help preserve our submarine design industrial base?

Mr. SCHANK. We, and the Navy, recognize the urgency of the study results and the Navy has asked us to accelerate our research. We are doing that and hope to have the initial results of our analysis to the Navy by mid-summer.

20. Senator LIEBERMAN. Mr. Schank, even if the RAND study identifies the critical skill sets that we must maintain so that we are prepared when we design a new submarine, how will those plans be implemented if designers are already losing their jobs?

Mr. SCHANK. There have been, and likely will continue to be for some time, a drop in the number of designers and engineers at Electric Boat. The key issue is to determine where that reduction should end and how to sustain the remaining resources such that the capability exists when needed. Our analysis will help the Navy decide the actions necessary to sustain appropriate numbers of the critical skills.

21. Senator LIEBERMAN. Mr. Schank, please give me a preview of the direction your study is taking—what are some good ideas which would help preserve the design industrial base in this country?

Mr. SCHANK. It is too early in our analysis to provide any concrete findings and recommendations. We do believe that the problem should be viewed from an industry perspective versus an individual shipyard perspective. We do note that Electric Boat's designers and engineers are supporting the new aircraft carrier program. They could also support other new ship design programs such as the DD(X).

[Whereupon, at 4:56 p.m., the subcommittee adjourned.]

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